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November 3, 2006

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PUBLIC UTILITIES  
COMMISSION

The Honorable Chairman and Members of  
the Hawaii Public Utilities Commission  
465 South King Street  
Kekuanaoa Building, 1st Floor  
Honolulu, Hawaii 96813

Dear Commissioners:

Subject: Docket No. 05-0069  
Energy Efficiency Docket

In the Division of Consumer Advocacy's Opening Brief, Section III.B.1.a.(2), pages 54 and 55, the Consumer Advocate addressed the Participant Cost ("PC") Test filed by HECO for its proposed DSM programs and stated that the PC test results were lower than they should be. The attached Exhibit A provides the corrected calculation which replaces the revised benefit cost ratios on pages 61 and 62 in HECO/HELCO/MECO's ("the Companies") Opening Brief, filed October 25, 2006.

In Section III.A.7.c., pages 57-60 of its Opening Brief, the Companies addressed *EE DSM Avoided Costs*, and at page 60 committed to provide the parties/participants an alternative calculation. The attached Exhibit B provides the alternative calculation and a supporting explanation.

In Section VI.C.4., pages 211-217, the Companies addressed *EE DSM Docket Utility Compensation Proposals*, and at page 217 committed to provide the parties/participants a calculation of avoided capital costs in response to the Rocky Mountain Institute's alternative utility compensation mechanism. The attached Exhibit C provides the calculation and a supporting explanation.

If you have any questions on this matter, please contact me at 543-4622.

Sincerely,

Dean K. Matsuura  
Director, Regulatory Affairs

Attachments

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**Cost Effectiveness Results -- 20-YEAR PLANNING HORIZON (2006-2025)**

Program	B/C Ratio		
	TRC	UC	PC
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	1.28	2.56	5.03
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	1.13	2.05	4.69
COMMERCIAL INDUSTRIAL CUSTOM REBATES	0.75	2.97	2.66
ENERGY SOLUTIONS FOR THE HOME	2.39	4.53	5.16
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	0.58	0.99	2.10
RESIDENTIAL NEW CONSTRUCTION PROGRAM	1.49	2.28	3.48
RESIDENTIAL LOW INCOME	4.96	2.41	NA
<b>TOTAL</b>	<b>1.22</b>	<b>2.42</b>	<b>3.92</b>

Cost Effectiveness Results -- 20-YEAR PLANNING HORIZON (2006-2025)

Program	Dollars			B/C Ratio
	Lifetime Benefits <sup>1</sup>	Lifetime Costs	Net Benefits	
Total Resource Cost Test Results:				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$120,999,359	\$94,308,896	\$26,690,463	1.28
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$48,010,155	\$42,562,089	\$5,448,066	1.13
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$73,730,977	\$98,819,764	(\$25,088,788)	0.75
ENERGY SOLUTIONS FOR THE HOME	\$102,446,532	\$42,807,877	\$59,638,655	2.39
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$38,888,629	\$66,560,103	(\$27,671,474)	0.58
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$63,052,341	\$42,441,563	\$20,610,777	1.49
RESIDENTIAL LOW INCOME	\$31,908,021	\$6,437,703	\$25,470,318	4.96
TOTAL	\$479,036,013	\$393,937,996	\$85,098,017	1.22
Utility Cost Test Results:				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$120,999,359	\$47,257,501	\$73,741,858	2.56
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$48,010,155	\$23,369,990	\$24,640,165	2.05
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$73,730,977	\$24,840,922	\$48,890,055	2.97
ENERGY SOLUTIONS FOR THE HOME	\$102,446,532	\$22,594,415	\$79,852,117	4.53
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$38,888,629	\$39,196,089	(\$307,460)	0.99
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$63,052,341	\$27,702,435	\$35,349,906	2.28
RESIDENTIAL LOW INCOME	\$31,908,021	\$13,229,064	\$18,678,957	2.41
TOTAL	\$479,036,013	\$198,190,415	\$280,845,597	2.42
Ratepayer Impact Measure Test Results:				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$120,999,359	\$329,581,395	(\$208,582,036)	0.37
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$48,010,155	\$133,939,761	(\$85,929,606)	0.36
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$73,730,977	\$227,201,725	(\$153,470,749)	0.32
ENERGY SOLUTIONS FOR THE HOME	\$102,446,532	\$134,457,721	(\$32,011,189)	0.76
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$38,888,629	\$106,336,850	(\$67,448,222)	0.37
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$63,052,341	\$86,929,026	(\$23,876,686)	0.73
RESIDENTIAL LOW INCOME	\$31,908,021	\$67,294,197	(\$35,386,176)	0.47
TOTAL	\$479,036,013	\$1,085,740,677	(\$606,704,664)	0.44
Participant Test Results:				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$282,323,895	\$56,115,411	\$226,208,483	5.03
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$110,569,771	\$23,552,317	\$87,017,454	4.69
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$202,360,803	\$76,046,097	\$126,314,707	2.66
ENERGY SOLUTIONS FOR THE HOME	\$111,863,306	\$21,678,462	\$90,184,844	5.16
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$67,140,761	\$31,957,349	\$35,183,413	2.10
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$59,226,591	\$17,036,425	\$42,190,166	3.48
RESIDENTIAL LOW INCOME	\$54,065,133	\$0	\$54,065,133	NA
TOTAL	\$887,550,261	\$226,386,061	\$661,164,200	3.92

<sup>1</sup> Avoided costs based on HECO System Planning estimates (DSM AC 2006A r2B.xls).

**Cost Effectiveness Analysis - Input Summary Table**  
**HECO ENERGY EFFICIENCY DOCKET**

**General Data**

Discount Rate (%)	8.09%
General Escalation Rate (%)	2.20%
Avoided Costs Escalation Rate	2.20%
Program Start Year	2006
Analysis Framework	20-YEAR PLANNING HORIZON
Externality Factor:	0%
Table Titles:	DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY
Customer to Generation Ratio:	11.17%

**FROM Docket DSM Backup Sheets (date).xls FILE:**

**Program-Specific Data**

Program	Program Name	Measure Lifetime	Net to Gross Ratio <sup>1</sup>		Retail Rate <sup>2</sup>	
			Energy	Demand	Energy (\$/kWh)	Demand (\$/kW)
1. CIEE	COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	15	0.6530	0.6640	0.161	46
2. CINC	COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	15	0.5960	0.6100	0.161	46
3. CICR	COMMERCIAL INDUSTRIAL CUSTOM REBATES	15	0.7590	0.7550	0.161	46
4. ESH	ENERGY SOLUTIONS FOR THE HOME	15	0.8500	0.8500	0.197	0
5. REWH	RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	15	0.7290	0.7310	0.197	0
6. RNC	RESIDENTIAL NEW CONSTRUCTION PROGRAM	15	0.8410	0.8850	0.197	0
7. RLI	RESIDENTIAL LOW INCOME	15	1.0000	1.0000	0.197	0
8. RDLC	RESIDENTIAL DIRECT LOAD CONTROL	15	1.0000	1.0000	0.197	0
9. CIDLC	COMMERCIAL INDUSTRIAL DIRECT LOAD CONTROL	15	1.0000	1.0000	0.161	46

1. Source: HECO A&S Report for existing programs; estimated values for new programs based on program experience.

2. Source: October 2005 recorded revenue per kwh for residential and commercial (Scheds J & P) customers. ECAF based on \$59.71/bbl LSFO.

TABLE 1. CIEE: DETAILED SUMMARY FOR 2006 START YEAR – 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY

Discount Rate	8%		2.2%		1%	
General Escalation Rate	2.2%		1%		0%	
Measure Lifetime (years)	15		15		15	

	Participant Test	Participant Impact Measure Test	Utility Cost Test	Total Resource Cost Test
Costs	\$56,115,411	\$226,208,483	5.03	
Net Benefits	\$120,999,359	\$329,581,395	\$208,582,036	0.37
B/C Ratio	\$120,999,359	\$47,257,501	\$73,741,858	2.56
	\$120,999,359	\$94,308,896	\$26,690,463	1.28

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cumulative Savings (Net System Level)																				
Peak Demand Reduction (kW)	2,284	4,567	6,851	9,135	11,418	13,697	15,981	18,264	20,547	22,830	25,113	27,396	29,679	31,962	34,245	36,528	38,811	41,094	43,377	45,660
Energy Savings (kWh)	15,266,176	30,532,351	45,798,527	61,064,703	76,330,878	91,597,053	106,863,228	122,129,403	137,395,578	152,661,753	167,927,928	183,194,103	198,460,278	213,726,453	228,992,628	244,258,803	259,524,978	274,791,153	290,057,328	305,323,503
Rate																				
Demand (\$/kW)	\$46.00	\$47.01	\$48.05	\$49.10	\$50.18	\$51.29	\$52.42	\$53.57	\$54.75	\$55.95	\$57.18	\$58.44	\$59.73	\$61.04	\$62.38	\$63.76	\$65.16	\$66.59	\$68.06	\$69.55
Energy (\$/kWh)	\$0.1611	\$0.1646	\$0.1683	\$0.1720	\$0.1758	\$0.1796	\$0.1836	\$0.1876	\$0.1917	\$0.1960	\$0.2003	\$0.2047	\$0.2092	\$0.2138	\$0.2185	\$0.2233	\$0.2282	\$0.2332	\$0.2383	\$0.2436

BENEFIT CALCULATIONS:																				
Avoided Costs (Utility Resource)																				
Demand	\$411,813	\$426,383	\$441,887	\$457,334	\$472,720	\$488,047	\$503,314	\$518,521	\$533,668	\$548,755	\$563,782	\$578,749	\$593,656	\$608,503	\$623,290	\$638,017	\$652,684	\$667,291	\$681,838	\$696,325
Energy	\$1,673,423	\$3,271,983	\$4,860,273	\$6,448,281	\$8,035,995	\$9,623,321	\$11,210,350	\$12,797,083	\$14,383,519	\$15,969,665	\$17,555,512	\$19,141,059	\$20,726,306	\$22,311,253	\$23,895,900	\$25,480,247	\$27,064,294	\$28,648,041	\$30,231,488	\$31,814,635
Total	\$2,085,236	\$3,698,366	\$5,302,160	\$6,923,615	\$8,548,215	\$10,171,407	\$11,793,664	\$13,414,604	\$15,034,113	\$16,652,365	\$18,269,337	\$19,885,014	\$21,499,505	\$23,112,853	\$24,725,053	\$26,337,111	\$27,948,135	\$29,558,125	\$31,167,173	\$32,775,289
Avoided Costs (Participant)																				
Demand	\$105,047	\$214,716	\$329,160	\$448,536	\$573,004	\$702,497	\$826,911	\$946,244	\$1,065,507	\$1,184,699	\$1,303,720	\$1,422,571	\$1,541,152	\$1,659,463	\$1,777,504	\$1,895,275	\$2,012,776	\$2,130,007	\$2,246,968	\$2,363,649
Energy	\$2,459,381	\$5,026,975	\$7,706,332	\$10,501,180	\$13,411,269	\$16,434,687	\$19,577,730	\$22,846,594	\$26,246,381	\$29,781,191	\$33,454,025	\$37,169,894	\$40,932,807	\$44,748,764	\$48,611,764	\$52,527,807	\$56,492,894	\$60,504,025	\$64,558,200	\$68,652,419
Total	\$2,564,428	\$5,241,691	\$8,035,512	\$11,049,725	\$14,388,273	\$17,815,183	\$21,332,939	\$24,964,983	\$28,711,972	\$32,575,811	\$36,455,745	\$40,356,979	\$44,284,301	\$48,235,726	\$52,209,227	\$56,213,501	\$60,240,299	\$64,281,125	\$68,334,400	\$72,402,020

COST CALCULATIONS:																				
Cost Input																				
Implementation	\$1,612,996	\$1,643,834	\$1,687,936	\$1,737,067	\$1,790,590	\$1,848,007	\$1,909,916	\$1,976,817	\$2,049,210	\$2,126,695	\$2,209,872	\$2,298,240	\$2,391,408	\$2,489,976	\$2,593,544	\$2,702,712	\$2,817,080	\$2,937,248	\$3,062,816	\$3,193,880
Incentives	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425
Participant	\$5,917,290	\$6,047,470	\$6,180,515	\$6,316,486	\$6,455,349	\$6,597,106	\$6,741,751	\$6,890,286	\$7,042,701	\$7,199,096	\$7,360,471	\$7,525,826	\$7,696,171	\$7,871,506	\$8,047,831	\$8,224,146	\$8,401,451	\$8,579,746	\$8,759,031	\$8,939,306
Total Participant Costs	\$56,115,411	\$4,567,101	\$4,860,273	\$5,164,486	\$5,478,701	\$5,794,916	\$6,113,131	\$6,434,346	\$6,758,561	\$7,085,776	\$7,416,991	\$7,752,206	\$8,091,421	\$8,434,636	\$8,781,851	\$9,133,066	\$9,488,281	\$9,847,496	\$10,210,711	\$10,577,926
Total RIM Costs	\$329,581,395	\$644,279	\$919,959	\$1,198,973	\$1,493,217	\$1,801,288	\$2,124,063	\$2,466,048	\$2,826,243	\$3,203,648	\$3,597,273	\$4,007,118	\$4,438,183	\$4,890,468	\$5,363,983	\$5,858,738	\$6,374,733	\$6,912,068	\$7,471,753	\$8,053,888
Total Utility Costs	\$47,257,501	\$1,878,331	\$3,909,259	\$6,195,461	\$8,682,492	\$11,384,281	\$14,301,015	\$17,436,699	\$20,893,354	\$24,670,989	\$28,779,604	\$33,229,209	\$38,038,814	\$43,216,429	\$48,772,054	\$54,716,679	\$61,061,304	\$67,826,929	\$75,033,554	\$82,190,179
Total TRC Costs	\$94,308,896	\$7,691,304	\$17,867,551	\$28,033,553	\$38,215,038	\$48,418,486	\$58,627,272	\$68,841,548	\$79,055,824	\$89,270,100	\$99,484,376	\$109,698,652	\$119,912,928	\$130,127,204	\$140,341,480	\$150,555,756	\$160,770,032	\$170,984,308	\$181,198,584	\$191,412,860

TABLE 2. CINC: DETAILED SUMMARY FOR 2006 START YEAR – 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: COMMERCIAL INDUSTRIAL NEW CONSTRUCTION

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefit	Costs	Net Benefit	B/C Ratio
Participant Test	\$110,569,771	\$23,552,317	\$87,017,454	4.69
Ratepayer Impact Measure Test	\$48,010,155	\$133,939,761	(\$85,929,606)	0.36
Utility Cost Test	\$48,010,155	\$23,369,990	\$24,640,165	2.05
Total Resource Cost Test	\$48,010,155	\$42,562,089	\$5,448,066	1.13

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025		
Cumulative Savings (Net System Level)																						
Peak Demand Reduction (kW)	874	1,747	2,621	3,494	4,368	5,235	6,013	6,765	7,506	8,246	8,763	9,279	9,796	10,312	10,829	11,194	11,194	11,194	11,194	11,194		
Energy Savings (kWh)	5,823,049	11,646,098	17,469,147	23,292,196	29,115,244	34,908,090	40,135,614	45,239,107	50,288,753	55,338,400	58,668,649	61,998,897	65,329,145	68,659,393	71,989,642	74,068,615	74,068,615	74,068,615	74,068,615	74,068,615		
Rates																						
Demand (\$/kW)	\$46.00	\$47.01	\$48.05	\$49.10	\$50.18	\$51.29	\$52.42	\$53.57	\$54.75	\$55.95	\$57.18	\$58.44	\$59.73	\$61.04	\$62.38	\$63.76	\$65.16	\$66.59	\$68.06	\$69.55		
Energy (\$/kWh)	\$0.1611	\$0.1646	\$0.1683	\$0.1720	\$0.1758	\$0.1796	\$0.1836	\$0.1876	\$0.1917	\$0.1960	\$0.2003	\$0.2047	\$0.2092	\$0.2138	\$0.2185	\$0.2233	\$0.2282	\$0.2332	\$0.2383	\$0.2436		
BENEFIT CALCULATIONS:																						
Avoided Costs (Utility, Ratepayer)	NPV																					
Demand	\$157,526	\$316,106	\$475,043	\$633,569	\$0	\$0	\$0	\$0	\$0	\$12,618,512	\$14,928,153	\$14,268,087	\$13,840,772	\$13,452,134	\$13,072,217	\$12,870,941	\$12,452,352	\$12,052,267	\$-4,605,461	\$-8,329,121		
Energy	\$638,302	\$1,248,048	\$1,785,218	\$2,489,655	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$-7,728,580	\$-7,783,403	\$-7,374,976	\$-7,536,068	\$-7,484,691	\$-7,527,419	\$-7,408,402	\$-8,095,946	\$-8,251,999	\$10,206,271	\$10,700,585		
Total	\$48,010,155	\$795,827	\$1,564,154	\$2,260,261	\$3,123,224	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$4,889,932	\$7,144,750	\$6,893,111	\$6,304,704	\$5,967,442	\$5,544,798	\$5,462,539	\$4,356,406	\$3,800,268	\$5,600,810	\$2,371,464	
Avoided Costs (Total Resource)																						
Demand	\$157,526	\$316,106	\$475,043	\$633,569	\$0	\$0	\$0	\$0	\$0	\$12,618,512	\$14,928,153	\$14,268,087	\$13,840,772	\$13,452,134	\$13,072,217	\$12,870,941	\$12,452,352	\$12,052,267	\$-4,605,461	\$-8,329,121		
Energy	\$638,302	\$1,248,048	\$1,785,218	\$2,489,655	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$-7,728,580	\$-7,783,403	\$-7,374,976	\$-7,536,068	\$-7,484,691	\$-7,527,419	\$-7,408,402	\$-8,095,946	\$-8,251,999	\$10,206,271	\$10,700,585		
Total	\$48,010,155	\$795,827	\$1,564,154	\$2,260,261	\$3,123,224	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$4,889,932	\$7,144,750	\$6,893,111	\$6,304,704	\$5,967,442	\$5,544,798	\$5,462,539	\$4,356,406	\$3,800,268	\$5,600,810	\$2,371,464	
Avoided Costs (Participant)																						
Demand	\$40,182	\$82,133	\$125,909	\$171,573	\$219,184	\$268,499	\$315,170	\$362,408	\$410,921	\$461,394	\$501,082	\$542,294	\$585,076	\$629,479	\$675,551	\$713,693	\$729,395	\$745,441	\$761,841	\$778,602		
Energy	\$938,093	\$1,917,462	\$2,939,470	\$4,005,518	\$5,117,049	\$6,270,124	\$7,367,681	\$8,487,227	\$9,642,143	\$10,843,768	\$11,749,262	\$12,689,349	\$13,665,114	\$14,677,671	\$15,728,166	\$16,538,389	\$16,902,234	\$17,274,083	\$17,654,113	\$18,042,503		
Total	\$110,569,771	\$978,276	\$1,999,595	\$3,065,379	\$4,177,090	\$5,336,233	\$6,538,622	\$7,682,851	\$8,849,635	\$10,053,064	\$11,305,161	\$12,250,344	\$13,231,643	\$14,250,190	\$15,307,150	\$16,403,718	\$17,252,082	\$17,631,628	\$18,019,524	\$18,415,954	\$18,821,105	
COST CALCULATIONS:																						
Cost Inputs:																						
Implementation	\$947,623	\$978,219	\$1,000,092	\$1,023,034	\$1,042,763	\$1,080,141	\$1,118,891	\$1,159,062	\$1,200,709	\$1,243,885	\$1,288,648	\$1,335,057	\$1,383,173	\$1,433,060	\$1,484,783	\$1,538,413	\$1,594,018	\$1,651,674	\$1,711,457	\$1,773,446		
Incentives	\$936,020	\$936,020	\$936,020	\$936,020	\$936,020	\$956,613	\$977,658	\$999,167	\$1,021,148	\$1,043,614	\$1,066,573	\$1,090,038	\$1,114,019	\$1,138,527	\$1,163,575	\$1,189,173	\$1,215,335	\$1,242,072	\$1,269,398	\$1,297,325		
Participant	\$2,424,795	\$2,478,141	\$2,532,660	\$2,588,378	\$2,645,322	\$2,703,520	\$2,762,997	\$2,823,783	\$2,885,906	\$2,949,396	\$3,014,283	\$3,080,597	\$3,148,370	\$3,217,634	\$3,288,422	\$3,360,768	\$3,434,704	\$3,510,268	\$3,587,494	\$3,666,419		
Total Participant Costs	NPV	\$23,552,317	\$1,866,927	\$1,920,272	\$1,974,792	\$2,030,510	\$2,087,454	\$2,133,378	\$2,180,313	\$2,228,280	\$2,277,302	\$2,327,402	\$2,378,605	\$2,430,935	\$2,484,415	\$2,539,072	\$2,594,932	\$2,652,020	\$2,710,365	\$2,769,993	\$2,830,933	\$2,893,213
Total RIM Costs	\$133,939,761	\$2,861,918	\$3,913,834	\$5,001,492	\$6,136,145	\$7,315,016	\$8,575,376	\$9,779,401	\$11,007,864	\$12,274,921	\$13,592,660	\$14,605,565	\$15,656,738	\$16,747,382	\$17,878,736	\$19,052,076	\$19,979,668	\$20,440,982	\$20,913,271	\$21,396,809	\$21,891,875	
Total Utility Costs	\$23,369,990	\$1,883,643	\$1,914,239	\$1,936,112	\$1,959,054	\$1,978,783	\$2,036,754	\$2,096,549	\$2,158,229	\$2,221,857	\$2,287,499	\$2,355,221	\$2,425,095	\$2,497,191	\$2,571,587	\$2,648,358	\$2,727,586	\$2,809,353	\$2,893,747	\$2,980,855	\$3,070,771	
Total TRC Costs	\$42,562,089	\$3,372,418	\$3,456,359	\$3,532,752	\$3,611,412	\$3,688,085	\$3,783,661	\$3,881,888	\$3,982,845	\$4,086,615	\$4,193,281	\$4,302,931	\$4,415,654	\$4,531,543	\$4,650,694	\$4,773,206	\$4,899,180	\$5,028,723	\$5,161,942	\$5,298,951	\$5,439,864	

TABLE 3. CICR: DETAILED SUMMARY FOR 2006 START YEAR – 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: COMMERCIAL INDUSTRIAL CUSTOM REBATES

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefits	Costs	Net Benefits	B/C Ratio
Participant Test	\$202,360,803	\$76,046,097	\$126,314,707	2.66
Ratepayer Impact Measure Test	\$73,730,977	\$227,201,725	(\$153,470,749)	0.32
Utility Cost Test	\$73,730,977	\$24,840,922	\$48,890,055	2.97
Total Resource Cost Test	\$73,730,977	\$98,819,764	(\$25,088,788)	0.75

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cumulative Savings (Net System Level)																				
Peak Demand Reduction (kW)	1,245	2,491	3,736	4,981	6,227	7,472	8,718	9,963	11,208	12,454	13,699	14,944	16,190	17,435	18,680	18,680	18,680	18,680	18,680	18,680
Energy Savings (kWh)	9,583,078	19,166,156	28,749,233	38,332,311	47,915,389	57,498,467	67,081,544	76,664,622	86,247,700	95,830,778	105,413,856	114,996,933	124,580,011	134,163,089	143,746,167	143,746,167	143,746,167	143,746,167	143,746,167	143,746,167
Rates																				
Demand (\$/kW)	\$46.00	\$47.01	\$48.05	\$49.10	\$50.18	\$51.29	\$52.42	\$53.57	\$54.75	\$55.95	\$57.18	\$58.44	\$59.73	\$61.04	\$62.38	\$63.76	\$65.16	\$66.59	\$68.06	\$69.55
Energy (\$/kWh)	\$0.1611	\$0.1646	\$0.1683	\$0.1720	\$0.1758	\$0.1796	\$0.1836	\$0.1876	\$0.1917	\$0.1960	\$0.2003	\$0.2047	\$0.2092	\$0.2138	\$0.2185	\$0.2233	\$0.2282	\$0.2332	\$0.2383	\$0.2436
BENEFIT CALCULATIONS:																				
Avoided Costs (Utility, Ratepayer)	NPV																			
Demand		\$224,580	\$450,662	\$677,254	\$903,259	\$0	\$0	\$0	\$0	\$19,056,734	\$23,337,406	\$22,978,731	\$22,874,722	\$22,743,315	\$22,550,100	\$21,478,660	\$20,780,131	\$20,112,480	-\$7,685,462	-\$13,899,401
Energy		\$1,050,462	\$2,053,931	\$2,937,960	\$4,097,262	\$4,739,008	\$5,773,271	\$6,979,211	\$7,949,064	\$9,388,899	-\$13,383,759	-\$13,984,958	-\$13,679,269	-\$14,370,974	-\$14,625,374	-\$15,030,462	-\$14,377,606	-\$15,711,933	-\$16,014,788	\$19,807,476
Total	\$73,730,977	\$1,275,042	\$2,504,593	\$3,615,215	\$5,000,521	\$4,739,008	\$5,773,271	\$6,979,211	\$7,949,064	\$9,388,899	\$5,672,976	\$9,352,448	\$9,299,462	\$8,503,748	\$8,117,940	\$7,519,638	\$7,101,054	\$5,068,198	\$4,097,692	\$12,122,014
Avoided Costs (Total Resource)																				
Demand		\$224,580	\$450,662	\$677,254	\$903,259	\$0	\$0	\$0	\$0	\$19,056,734	\$23,337,406	\$22,978,731	\$22,874,722	\$22,743,315	\$22,550,100	\$21,478,660	\$20,780,131	\$20,112,480	-\$7,685,462	-\$13,899,401
Energy		\$1,050,462	\$2,053,931	\$2,937,960	\$4,097,262	\$4,739,008	\$5,773,271	\$6,979,211	\$7,949,064	\$9,388,899	-\$13,383,759	-\$13,984,958	-\$13,679,269	-\$14,370,974	-\$14,625,374	-\$15,030,462	-\$14,377,606	-\$15,711,933	-\$16,014,788	\$19,807,476
Total	\$73,730,977	\$1,275,042	\$2,504,593	\$3,615,215	\$5,000,521	\$4,739,008	\$5,773,271	\$6,979,211	\$7,949,064	\$9,388,899	\$5,672,976	\$9,352,448	\$9,299,462	\$8,503,748	\$8,117,940	\$7,519,638	\$7,101,054	\$5,068,198	\$4,097,692	\$12,122,014
Avoided Costs (Participant)																				
Demand		\$57,287	\$117,094	\$179,505	\$244,606	\$312,484	\$383,230	\$456,938	\$533,704	\$613,626	\$696,806	\$783,349	\$873,363	\$966,959	\$1,064,250	\$1,165,354	\$1,190,991	\$1,217,193	\$1,243,971	\$1,271,339
Energy		\$1,543,834	\$3,155,596	\$4,817,529	\$6,591,940	\$8,421,203	\$10,327,763	\$12,314,137	\$14,382,912	\$16,536,753	\$18,778,401	\$21,110,679	\$23,536,488	\$26,058,815	\$28,680,732	\$31,405,402	\$32,096,321	\$32,802,440	\$33,524,093	\$34,261,623
Total	\$202,360,803	\$1,601,121	\$3,272,690	\$5,017,034	\$6,836,545	\$8,733,687	\$10,710,994	\$12,771,075	\$14,916,615	\$17,150,378	\$19,475,207	\$21,894,028	\$24,409,851	\$27,025,773	\$29,744,982	\$32,570,755	\$33,287,312	\$34,019,633	\$34,768,065	\$35,532,962
COST CALCULATIONS:																				
Cost Inputs:																				
Implementation		\$1,220,696	\$1,255,101	\$1,284,998	\$1,316,284	\$1,344,572	\$1,393,880	\$1,445,023	\$1,498,069	\$1,553,089	\$1,610,159	\$1,669,354	\$1,730,755	\$1,794,445	\$1,860,509	\$1,929,036	\$2,000,120	\$2,073,857	\$2,150,345	\$2,229,689
Incentives		\$743,936	\$743,936	\$743,936	\$743,936	\$743,936	\$760,302	\$777,029	\$794,123	\$811,594	\$829,449	\$847,697	\$866,346	\$885,406	\$904,885	\$924,792	\$945,138	\$965,931	\$987,181	\$1,008,899
Participant		\$5,529,133	\$6,819,165	\$6,982,447	\$7,149,912	\$7,321,677	\$7,497,865	\$7,678,601	\$7,864,015	\$8,054,241	\$8,249,418	\$8,449,690	\$8,655,202	\$8,866,109	\$9,082,568	\$9,304,740	\$9,532,795	\$9,766,905	\$10,007,251	\$10,254,018
Total Participant Costs	NPV	\$76,046,097	\$4,964,486	\$6,254,518	\$6,417,800	\$6,585,265	\$6,757,030	\$6,920,796	\$7,088,836	\$7,261,275	\$7,438,241	\$7,619,867	\$7,806,288	\$7,997,646	\$8,194,086	\$8,395,760	\$8,602,823	\$8,815,435	\$9,033,764	\$9,257,981
Total RIM Costs		\$227,201,725	\$3,565,752	\$5,271,726	\$7,045,968	\$8,896,765	\$10,822,194	\$12,865,176	\$14,993,126	\$17,208,807	\$19,515,062	\$21,914,816	\$24,411,080	\$27,006,953	\$29,705,624	\$32,510,376	\$35,424,584	\$38,432,570	\$37,059,420	\$37,905,591
Total Utility Costs		\$24,840,922	\$1,964,632	\$1,999,036	\$2,028,934	\$2,060,220	\$2,088,507	\$2,154,182	\$2,222,051	\$2,292,192	\$2,364,684	\$2,439,608	\$2,517,051	\$2,597,102	\$2,679,851	\$2,765,394	\$2,853,829	\$2,945,258	\$3,039,787	\$3,137,526
Total TRC Costs		\$98,819,764	\$6,749,829	\$8,074,265	\$8,267,446	\$8,466,196	\$8,666,249	\$8,891,745	\$9,123,623	\$9,362,083	\$9,607,331	\$9,859,577	\$10,119,044	\$10,385,958	\$10,660,554	\$10,943,076	\$11,233,776	\$11,532,915	\$11,840,762	\$12,157,596

TABLE 4. ESH: DETAILED SUMMARY FOR 2006 START YEAR – 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: ENERGY SOLUTIONS FOR THE HOME

Discount Rate	6%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefits	Costs	Net Benefit	B/C Ratio
Participant Test	\$111,863,306	\$21,678,462	\$90,184,844	5.16
Ratepayer Impact Measure Test	\$102,446,532	\$134,457,721	(\$32,011,189)	0.76
Utility Cost Test	\$102,446,532	\$22,594,415	\$79,852,117	4.53
Total Resource Cost Test	\$102,446,532	\$42,807,877	\$59,638,655	2.39

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Cumulative Savings (Net System Level)																					
Peak Demand Reduction (kW)	4,053	6,939	8,771	10,603	12,085	11,466	12,015	13,146	14,278	15,760	17,230	18,700	18,700	18,700	18,700	18,700	18,700	18,700	18,700	18,700	
Energy Savings (kWh)	16,193,843	26,133,247	32,203,749	38,274,251	42,468,421	35,404,600	34,595,219	36,913,057	39,230,895	43,425,065	46,675,509	49,925,952	49,925,952	49,925,952	49,925,952	49,925,952	49,925,952	49,925,952	49,925,952	49,925,952	
Rates																					
Demand (\$/kW)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Energy (\$/kWh)	\$0.1968	\$0.2011	\$0.2056	\$0.2101	\$0.2147	\$0.2194	\$0.2242	\$0.2292	\$0.2342	\$0.2394	\$0.2446	\$0.2500	\$0.2555	\$0.2611	\$0.2669	\$0.2728	\$0.2788	\$0.2849	\$0.2912	\$0.2976	
BENEFIT CALCULATIONS:	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Avoided Costs (Utility, Ratepayer)	NPV																				
Demand		\$730,906	\$1,255,514	\$1,589,979	\$1,922,642	\$0	\$0	\$0	\$0	\$24,116,648	\$29,353,361	\$28,754,076	\$26,422,086	\$24,393,850	\$22,574,172	\$21,501,588	\$20,802,314	\$20,133,950	-\$7,693,667	-\$13,914,238	
Energy		\$1,775,110	\$2,800,556	\$3,290,987	\$4,091,056	\$4,200,283	\$3,554,883	\$3,599,311	\$3,827,375	\$4,270,663	\$6,064,759	\$6,192,308	\$5,938,859	\$5,759,227	\$5,442,523	\$5,220,384	\$4,993,633	\$5,457,072	-\$5,562,260	\$6,879,537	\$7,212,730
Total	\$102,446,532	\$2,506,016	\$4,056,070	\$4,880,966	\$6,013,698	\$4,200,283	\$3,554,883	\$3,599,311	\$3,827,375	\$4,270,663	\$18,051,888	\$23,161,053	\$22,815,217	\$20,662,859	\$18,951,326	\$17,353,789	\$16,507,955	\$15,345,241	\$14,571,690	-\$814,129	-\$6,701,509
Avoided Costs (Total Resource)																					
Demand		\$730,906	\$1,255,514	\$1,589,979	\$1,922,642	\$0	\$0	\$0	\$0	\$24,116,648	\$29,353,361	\$28,754,076	\$26,422,086	\$24,393,850	\$22,574,172	\$21,501,588	\$20,802,314	\$20,133,950	-\$7,693,667	-\$13,914,238	
Energy		\$1,775,110	\$2,800,556	\$3,290,987	\$4,091,056	\$4,200,283	\$3,554,883	\$3,599,311	\$3,827,375	\$4,270,663	\$6,064,759	\$6,192,308	\$5,938,859	\$5,759,227	\$5,442,523	\$5,220,384	\$4,993,633	\$5,457,072	-\$5,562,260	\$6,879,537	\$7,212,730
Total	\$102,446,532	\$2,506,016	\$4,056,070	\$4,880,966	\$6,013,698	\$4,200,283	\$3,554,883	\$3,599,311	\$3,827,375	\$4,270,663	\$18,051,888	\$23,161,053	\$22,815,217	\$20,662,859	\$18,951,326	\$17,353,789	\$16,507,955	\$15,345,241	\$14,571,690	-\$814,129	-\$6,701,509
Avoided Costs (Participant)																					
Demand		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Energy		\$3,186,948	\$5,256,169	\$6,619,624	\$8,040,526	\$9,117,899	\$7,768,537	\$7,757,942	\$8,459,825	\$9,188,836	\$10,394,980	\$11,418,870	\$12,482,780	\$12,757,401	\$13,038,064	\$13,324,901	\$13,618,049	\$13,917,646	\$14,223,834	\$14,536,759	\$14,856,567
Total	\$111,863,306	\$3,186,948	\$5,256,169	\$6,619,624	\$8,040,526	\$9,117,899	\$7,768,537	\$7,757,942	\$8,459,825	\$9,188,836	\$10,394,980	\$11,418,870	\$12,482,780	\$12,757,401	\$13,038,064	\$13,324,901	\$13,618,049	\$13,917,646	\$14,223,834	\$14,536,759	\$14,856,567
COST CALCULATIONS:																					
Cost Inputs:																					
Implementation		\$1,033,612	\$1,061,865	\$991,073	\$1,022,696	\$1,041,502	\$1,090,333	\$1,129,850	\$1,170,826	\$1,213,315	\$1,257,376	\$1,303,066	\$1,350,446	\$1,399,579	\$1,450,531	\$1,503,371	\$1,558,168	\$1,614,997	\$1,673,932	\$1,735,053	\$1,798,442
Incentives		\$1,231,250	\$981,250	\$856,250	\$856,250	\$781,250	\$798,438	\$816,003	\$833,955	\$852,302	\$871,053	\$890,216	\$909,801	\$929,816	\$950,272	\$971,178	\$992,544	\$1,014,380	\$1,036,697	\$1,059,504	\$1,082,813
Participant		\$3,182,513	\$2,753,026	\$2,558,347	\$2,614,631	\$2,512,192	\$2,567,461	\$2,623,945	\$2,681,671	\$2,740,668	\$2,800,963	\$2,862,584	\$2,925,561	\$2,989,923	\$3,055,702	\$3,122,927	\$3,191,631	\$3,261,847	\$3,333,608	\$3,406,947	\$3,481,900
Total Participant Costs	NPV																				
	\$21,678,462	\$2,135,951	\$1,918,964	\$1,830,534	\$1,886,818	\$1,848,130	\$1,888,789	\$1,930,342	\$1,972,810	\$2,016,211	\$2,060,568	\$2,105,901	\$2,152,230	\$2,199,579	\$2,247,970	\$2,297,426	\$2,347,969	\$2,399,624	\$2,452,416	\$2,506,369	\$2,561,509
Total RIM Costs	\$134,457,721	\$5,451,810	\$7,299,284	\$8,466,947	\$9,919,472	\$10,940,651	\$9,657,308	\$9,703,795	\$10,464,606	\$11,254,453	\$12,523,408	\$13,612,151	\$14,743,026	\$15,086,796	\$15,438,867	\$15,799,450	\$16,168,761	\$16,547,023	\$16,934,463	\$17,331,316	\$17,737,823
Total Utility Costs	\$22,594,415	\$2,264,862	\$2,043,115	\$1,847,323	\$1,878,946	\$1,822,752	\$1,888,771	\$1,945,853	\$2,004,781	\$2,065,618	\$2,128,429	\$2,193,282	\$2,260,246	\$2,329,395	\$2,400,804	\$2,474,549	\$2,550,713	\$2,629,377	\$2,710,629	\$2,794,557	\$2,881,255
Total TRC Costs	\$42,807,877	\$4,216,125	\$3,814,891	\$3,549,420	\$3,637,326	\$3,553,694	\$3,657,794	\$3,753,794	\$3,852,497	\$3,953,984	\$4,058,339	\$4,165,650	\$4,276,007	\$4,389,502	\$4,506,233	\$4,626,298	\$4,749,800	\$4,876,844	\$5,007,540	\$5,142,001	\$5,280,343



PROGRAM NAME: RESIDENTIAL EFFICIENT WATER HEATING PROGRAM

	Beneficiaries	Costs	Net Benefits	B/C Ratio
Participant Test	\$671,407,661	\$31,957,349	\$335,183,413	2.10
Employer Impact Measure Test	\$38,888,629	\$106,36,850	\$67,448,222	0.37
Beneficiary Cost Test	\$38,888,629	\$39,196,089	(\$307,460)	0.99
Total Resource Cost Test	\$38,888,629	\$66,560,103	(\$27,671,474)	0.58

Cumulative Savings (Net System Level)		Benefit Calculations:												Cost Calculations:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011	3012	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037	3038	3039	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050	3051

TABLE 6. RNC: DETAILED SUMMARY FOR 2006 START YEAR – 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: RESIDENTIAL NEW CONSTRUCTION PROGRAM

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefits	Costs	Net Benefit	B/C Ratio
Participant Test	\$59,226,591	\$17,036,425	\$42,190,166	3.48
Ratepayer Impact Measure Test	\$63,052,341	\$86,929,026	(\$23,876,686)	0.73
Utility Cost Test	\$63,052,341	\$27,702,435	\$35,349,906	2.28
Total Resource Cost Test	\$63,052,341	\$42,441,563	\$20,610,777	1.49

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Cumulative Savings (Net System Level)																					
Peak Demand Reduction (kW)	787	2,002	2,996	3,989	4,982	5,939	6,896	7,853	8,810	9,754	10,697	11,640	12,584	13,527	14,471	14,471	14,471	14,471	14,471	14,471	
Energy Savings (kWh)	2,542,113	5,893,331	8,267,217	10,641,102	13,014,988	15,203,228	17,391,467	19,579,706	21,767,945	23,895,593	26,023,240	28,150,887	30,278,534	32,406,181	34,533,828	34,533,828	34,533,828	34,533,828	34,533,828	34,533,828	
Rates																					
Demand (\$/kW)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Energy (\$/kWh)	\$0.1968	\$0.2011	\$0.2056	\$0.2101	\$0.2147	\$0.2194	\$0.2242	\$0.2292	\$0.2342	\$0.2394	\$0.2446	\$0.2500	\$0.2555	\$0.2611	\$0.2669	\$0.2728	\$0.2788	\$0.2849	\$0.2912	\$0.2976	
BENEFIT CALCULATIONS:	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Avoided Costs (Utility, Ratepay	NPV																				
Demand		\$141,878	\$362,252	\$543,007	\$723,290	\$0	\$0	\$0	\$0	\$14,925,067	\$18,223,221	\$17,898,485	\$17,779,852	\$17,645,653	\$17,468,196	\$16,638,216	\$16,097,108	\$15,579,919	-\$5,953,462	-\$10,767,023	
Energy		\$278,657	\$631,556	\$844,849	\$1,137,406	\$1,287,230	\$1,526,516	\$1,809,420	\$2,030,145	\$2,369,652	\$3,337,266	\$3,452,430	\$3,348,642	\$3,492,792	\$3,532,660	\$3,610,944	\$3,454,101	\$3,774,662	\$3,847,420	\$4,758,582	\$4,989,052
Total	\$63,052,341	\$420,536	\$993,807	\$1,387,856	\$1,860,695	\$1,287,230	\$1,526,516	\$1,809,420	\$2,030,145	\$2,369,652	\$11,587,800	\$14,770,791	\$14,549,843	\$14,287,060	\$14,112,993	\$13,857,251	\$13,184,115	\$12,322,446	\$11,732,499	-\$1,194,879	-\$5,777,971
Avoided Costs (Total Resource)																					
Demand		\$141,878	\$362,252	\$543,007	\$723,290	\$0	\$0	\$0	\$0	\$14,925,067	\$18,223,221	\$17,898,485	\$17,779,852	\$17,645,653	\$17,468,196	\$16,638,216	\$16,097,108	\$15,579,919	-\$5,953,462	-\$10,767,023	
Energy		\$278,657	\$631,556	\$844,849	\$1,137,406	\$1,287,230	\$1,526,516	\$1,809,420	\$2,030,145	\$2,369,652	\$3,337,266	\$3,452,430	\$3,348,642	\$3,492,792	\$3,532,660	\$3,610,944	\$3,454,101	\$3,774,662	\$3,847,420	\$4,758,582	\$4,989,052
Total	\$63,052,341	\$420,536	\$993,807	\$1,387,856	\$1,860,695	\$1,287,230	\$1,526,516	\$1,809,420	\$2,030,145	\$2,369,652	\$11,587,800	\$14,770,791	\$14,549,843	\$14,287,060	\$14,112,993	\$13,857,251	\$13,184,115	\$12,322,446	\$11,732,499	-\$1,194,879	-\$5,777,971
Avoided Costs (Participant)																					
Demand	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Energy	\$500,288	\$1,185,323	\$1,699,363	\$2,235,447	\$2,794,296	\$3,335,918	\$3,900,019	\$4,487,325	\$5,098,585	\$5,720,065	\$6,366,422	\$7,038,450	\$7,736,966	\$8,462,810	\$9,216,847	\$9,419,617	\$9,626,849	\$9,838,640	\$10,055,090	\$10,276,302	
Total	\$59,226,591	\$500,288	\$1,185,323	\$1,699,363	\$2,235,447	\$2,794,296	\$3,335,918	\$3,900,019	\$4,487,325	\$5,098,585	\$5,720,065	\$6,366,422	\$7,038,450	\$7,736,966	\$8,462,810	\$9,216,847	\$9,419,617	\$9,626,849	\$9,838,640	\$10,055,090	\$10,276,302
COST CALCULATIONS:																					
Cost Inputs:																					
Implementation	\$1,016,038	\$1,044,216	\$1,010,525	\$1,045,178	\$1,081,170	\$1,124,214	\$1,168,863	\$1,215,176	\$1,263,213	\$1,313,039	\$1,364,717	\$1,418,317	\$1,473,907	\$1,531,562	\$1,591,356	\$1,647,651	\$1,705,994	\$1,766,459	\$1,829,126	\$1,894,077	
Incentives	\$1,252,000	\$1,459,893	\$1,039,893	\$1,069,893	\$1,099,893	\$1,154,750	\$1,211,489	\$1,270,166	\$1,330,838	\$1,393,565	\$1,458,408	\$1,525,429	\$1,594,693	\$1,666,267	\$1,740,218	\$1,778,503	\$1,817,630	\$1,857,618	\$1,898,486	\$1,940,252	
Participant	\$2,211,830	\$2,756,570	\$2,448,282	\$2,502,144	\$2,557,191	\$2,613,449	\$2,670,945	\$2,729,706	\$2,789,760	\$2,851,134	\$2,913,859	\$2,977,964	\$3,043,479	\$3,110,436	\$3,178,865	\$3,248,801	\$3,320,274	\$3,393,320	\$3,467,973	\$3,544,269	
Total Participant Costs	NPV																				
	\$17,036,425	\$1,158,898	\$1,528,800	\$1,573,732	\$1,602,364	\$1,632,181	\$1,642,304	\$1,652,083	\$1,661,496	\$1,670,525	\$1,679,146	\$1,687,338	\$1,695,078	\$1,702,342	\$1,709,105	\$1,715,342	\$1,753,079	\$1,791,647	\$1,831,063	\$1,871,347	\$1,912,516
Total RIM Costs	\$86,929,026	\$2,768,326	\$3,689,432	\$3,749,781	\$4,350,518	\$4,975,359	\$5,614,882	\$6,280,371	\$6,972,667	\$7,692,637	\$8,426,668	\$9,189,547	\$9,982,196	\$10,805,567	\$11,660,639	\$12,548,421	\$12,845,772	\$13,150,473	\$13,462,717	\$13,782,702	\$14,110,631
Total Utility Costs	\$27,702,435	\$2,268,038	\$2,504,108	\$2,050,418	\$2,115,071	\$2,181,063	\$2,278,964	\$2,380,352	\$2,485,342	\$2,594,051	\$2,706,604	\$2,823,125	\$2,943,746	\$3,068,601	\$3,197,829	\$3,331,575	\$3,426,155	\$3,523,624	\$3,624,077	\$3,727,612	\$3,834,329
Total TRC Costs	\$42,441,563	\$3,227,868	\$3,800,785	\$3,458,807	\$3,547,322	\$3,638,361	\$3,737,663	\$3,839,808	\$3,944,882	\$4,052,973	\$4,164,173	\$4,278,576	\$4,396,281	\$4,517,387	\$4,641,998	\$4,770,222	\$4,896,452	\$5,026,268	\$5,159,779	\$5,297,100	\$5,438,345

TABLE 7. RLI: DETAILED SUMMARY FOR 2006 START YEAR - 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: RESIDENTIAL LOW INCOME

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (Years)	15

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Participant Test	\$4,065,133	\$4,065,133	N/A																	
Ratepayer Impact Measure Test	\$67,294,197	\$35,386,176	0.47																	
Utility Cost Test	\$11,908,021	\$18,678,957	2.41																	
Total Resource Cost Test	\$31,908,021	\$6,437,703	-4.96																	

#### Cumulative Savings (Net System Level)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Peak Demand Reduction (kW)	591	1,182	1,773	2,364	2,954	3,381	3,807	4,233	4,659	5,085	5,511	5,937	6,363	6,789	7,215	7,215	7,215	7,215	7,215	7,215
Energy Savings (kWh)	2,633,290	5,266,579	7,899,869	10,533,159	13,166,449	14,916,759	16,667,069	18,417,379	20,167,689	21,917,999	23,668,309	25,418,619	27,168,929	28,919,239	30,669,549	30,669,549	30,669,549	30,669,549	30,669,549	30,669,549
<b>Rates</b>																				
Demand (\$/kW)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Energy (\$/kWh)	\$0.1968	\$0.2011	\$0.2056	\$0.2101	\$0.2147	\$0.2194	\$0.2242	\$0.2292	\$0.2342	\$0.2394	\$0.2446	\$0.2500	\$0.2555	\$0.2611	\$0.2669	\$0.2728	\$0.2788	\$0.2849	\$0.2912	\$0.2976

#### BENEFIT CALCULATIONS:

##### Avoided Costs (Utility, Ratepayer)

Demand	\$106,555	\$213,824	\$321,334	\$428,565	\$0	\$0	\$0	\$0	\$0	\$7,781,006	\$9,388,776	\$9,129,014	\$8,990,684	\$8,856,362	\$8,710,081	\$8,296,233	\$8,026,423	\$7,768,539	\$7,508,546	\$7,248,554
Energy	\$388,652	\$564,390	\$807,309	\$1,125,868	\$1,302,210	\$1,497,753	\$1,734,053	\$1,909,628	\$2,195,449	\$3,061,075	\$3,140,007	\$3,023,630	\$3,134,082	\$3,152,541	\$3,206,885	\$3,067,593	\$3,352,283	\$3,416,590	\$4,226,105	\$4,430,785
Total	\$31,908,021	\$778,214	\$1,128,642	\$1,554,433	\$1,302,210	\$1,497,753	\$1,734,053	\$1,909,628	\$2,195,449	\$4,719,031	\$6,248,668	\$6,105,385	\$5,856,602	\$5,703,820	\$5,503,196	\$5,228,640	\$4,674,139	\$4,351,639	\$4,226,105	\$4,430,785

##### Avoided Costs (Total Resource)

Demand	\$106,555	\$213,824	\$321,334	\$428,565	\$0	\$0	\$0	\$0	\$0	\$7,781,006	\$9,388,776	\$9,129,014	\$8,990,684	\$8,856,362	\$8,710,081	\$8,296,233	\$8,026,423	\$7,768,539	\$7,508,546	\$7,248,554
Energy	\$388,652	\$564,390	\$807,309	\$1,125,868	\$1,302,210	\$1,497,753	\$1,734,053	\$1,909,628	\$2,195,449	\$3,061,075	\$3,140,007	\$3,023,630	\$3,134,082	\$3,152,541	\$3,206,885	\$3,067,593	\$3,352,283	\$3,416,590	\$4,226,105	\$4,430,785
Total	\$31,908,021	\$778,214	\$1,128,642	\$1,554,433	\$1,302,210	\$1,497,753	\$1,734,053	\$1,909,628	\$2,195,449	\$4,719,031	\$6,248,668	\$6,105,385	\$5,856,602	\$5,703,820	\$5,503,196	\$5,228,640	\$4,674,139	\$4,351,639	\$4,226,105	\$4,430,785

##### Avoided Costs (Participant)

Demand	\$18,231	\$1,059,265	\$1,023,853	\$2,212,771	\$2,826,815	\$3,273,061	\$3,737,573	\$4,220,940	\$4,723,766	\$5,246,674	\$5,790,303	\$6,355,312	\$6,942,380	\$7,552,202	\$8,185,496	\$8,365,577	\$8,549,620	\$8,737,712	\$8,929,941	\$9,126,400
Energy	\$518,231	\$1,059,265	\$1,023,853	\$2,212,771	\$2,826,815	\$3,273,061	\$3,737,573	\$4,220,940	\$4,723,766	\$5,246,674	\$5,790,303	\$6,355,312	\$6,942,380	\$7,552,202	\$8,185,496	\$8,365,577	\$8,549,620	\$8,737,712	\$8,929,941	\$9,126,400
Total	\$536,462	\$2,118,530	\$2,047,706	\$4,425,546	\$5,653,630	\$6,546,122	\$7,475,146	\$8,441,880	\$9,447,532	\$10,493,348	\$11,580,606	\$12,710,624	\$13,884,760	\$15,104,404	\$16,370,992	\$16,731,154	\$17,099,240	\$17,475,424	\$17,856,841	\$18,242,800

#### COST CALCULATIONS:

##### Cost Inputs:

Implementation	\$464,975	\$488,027	\$507,177	\$522,493	\$539,490	\$558,577	\$578,358	\$598,859	\$620,107	\$642,128	\$664,953	\$688,611	\$713,132	\$738,548	\$764,894	\$792,202	\$820,510	\$849,854	\$880,273	\$911,806
Incentives	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000	\$580,000
Participant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

##### Total Participant Costs

Total Participant Costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
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##### Total RIM Costs

Total RIM Costs	\$67,294,197	\$1,572,206	\$2,136,292	\$3,324,263	\$3,955,304	\$4,433,595	\$4,931,132	\$5,448,534	\$5,986,440	\$6,545,506	\$7,126,408	\$7,729,840	\$8,356,518	\$9,007,180	\$9,682,581	\$9,906,079	\$10,134,892	\$10,369,152	\$10,608,995	\$10,854,560
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##### Total Utility Costs

Total Utility Costs	\$11,229,064	\$1,053,975	\$1,077,027	\$1,096,177	\$1,111,493	\$1,128,490	\$1,149,535	\$1,175,594	\$1,206,674	\$1,242,833	\$1,284,105	\$1,330,528	\$1,414,139	\$1,454,978	\$1,497,084	\$1,540,501	\$1,585,272	\$1,631,440	\$1,679,054	\$1,728,160
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##### Total TRC Costs

Total TRC Costs	\$6,437,703	\$488,027	\$507,177	\$522,493	\$539,490	\$558,577	\$578,358	\$598,859	\$620,107	\$642,128	\$664,953	\$688,611	\$713,132	\$738,548	\$764,894	\$792,202	\$820,510	\$849,854	\$880,273	\$911,806
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# **Avoided Capacity and Energy Costs**

SCENARIO: Used year-by-year estimates for 20-year forecast horizon (2006-2025), then the escalated levelized value for years beyond.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
<b>Electric Avoided Cost</b>																							
Demand (\$/kW)	\$180	\$181	\$181	\$181	\$0	\$0	\$0	\$0	\$0	\$1,530	\$1,704	\$1,538	\$1,413	\$1,304	\$1,207	\$1,150	\$1,112	\$1,077	-\$411	-\$744	\$662	\$662	
Average Energy-(\$/kWh)	\$0.110	\$0.107	\$0.102	\$0.107	\$0.099	\$0.100	\$0.104	\$0.104	\$0.109	-\$0.140	-\$0.133	-\$0.119	-\$0.115	-\$0.109	-\$0.105	-\$0.100	-\$0.109	-\$0.111	\$0.138	\$0.144	-\$0.006	-\$0.006	
	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Demand (\$/kW)	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	\$662	
Average Energy-(\$/kWh)	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	-\$0.006	

Source: HECO System Planning estimates (DSM AC 2006A r2B.xls) (see below)

## Data from DSM AC 2006A r2.xls

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Year-by-year Estimates																				
Demand (\$/kW)	193.1343	193.78	194.14	194.2	0	0	0	0	0	1638.8	1824.5	1646.8	1513.2	1397.1	1292.8	1231.4	1191.4	1153.1	-440.6	-796.9
Average Energy (\$/MWh)	117.398	114.77	109.45	114.48	105.92	107.54	111.43	111.05	116.59	-149.6	-142.1	-127.4	-123.5	-116.8	-112	-107.1	-117.1	-119.3	147.58	154.72
Average Energy (\$/kWh)	0.117398	0.1148	0.1094	0.1145	0.1059	0.1075	0.1114	0.111	0.1166	-0.15	-0.142	-0.127	-0.124	-0.117	-0.112	-0.107	-0.117	-0.119	0.1476	0.1547

Avoided Cost (Levelized) -- Costs held constant from 2026 to 2050.

Demand (\$/kW)	\$709
Average Energy (\$/kWh)	-\$0.0068

Adjustment of Avoided costs to reflect Net-to-System: Based on email from Alan Hee (8/9/06):

Please multiply the avoided costs from Exhibit 12 by  $(1-0.1117) \div (1-0.04864) = 0.93372$  so that they can be multiplied times the gross generation levels of kw and kwh

Adjustment Factor: 0.9337

Energy Efficiency DSM Program Avoided Costs and  
Alternative Avoided Cost Allocation Calculation

The cost-effectiveness of the Energy Efficiency DSM programs was assessed by comparing the costs avoided as a result of the implementation of the programs against the program implementation costs. The avoided costs were estimated by calculating the difference in costs (capacity and energy) between a "Future EE DSM" (or "base") resource plan, which included the DSM programs, and a "No Future EE DSM" (or "alternate") resource plan, which excluded the DSM programs. See revised Exhibit 12 at 1-3.

As explained in Exhibit 12, the avoided costs were estimated from base and alternate plans under a "Scenario A," which included the specific assumptions described in the Exhibit. The avoided costs are sensitive to the assumptions, and a change in the assumptions would produce different avoided cost results. The assumptions used in Scenario A, and some of their associated uncertainties, were as provided in HECO's Opening Brief at pages 58-59.

An issue was raised at the panel hearings by RMI with respect to the allocation of the avoided cost benefits to the energy efficiency programs. The avoided costs benefits arise primarily out of the assumed deferral of a 180 MW coal unit from 2015 to 2024. This results in high avoided capacity costs during those years, but negative avoided energy costs (because the coal unit would have displaced higher cost oil-fired kWh had it not been deferred).

To address this concern, HECO committed to do an alternative calculation, in which the avoided capacity costs were limited to the value of a proxy combustion turbine ("Proxy CT"). Tr. (8/29) at 475 (Williams). In such a calculation, the difference between the avoided capacity costs for the coal unit and the Proxy CT are added to the avoided energy costs, so that total avoided costs remain the same. The calculation and explanation of the alternative avoided cost allocation calculation follows.

In Exhibit 12, submitted in response to CA-IR-9 (revised on August 24, 2006), HECO provided energy and capacity costs avoided by its portfolio of proposed energy efficiency programs. As indicated in Exhibit 12, the avoided costs were based on the deferral of a coal unit and were used to develop DSM program cost-effectiveness test results measured by benefit/cost ratios. This is the same method used throughout the implementation of the DSM programs since 1996.

Rocky Mountain Institute ("RMI") accepted the calculated net present value ("NPV") for the entire portfolio of energy efficiency programs, but raised questions about the appropriateness of the benefit/cost ratio results for individual DSM programs. Specifically, RMI disagreed with the method HECO used to allocate the benefits of energy and demand savings to each program.

Following discussion with RMI, HECO developed an alternative method to explore a different allocation of energy and demand savings benefits to the individual energy efficiency DSM programs. The alternative avoided cost calculation, attached, seeks to preserve the overall energy plus capacity NPV benefits at the portfolio level, but reallocate the benefits between capacity and energy. In other words, this alternative calculation is a different method of allocating the costs avoided by the portfolio of energy efficiency programs, but is not a different avoided cost.

In the alternative calculation of avoided capacity costs, HECO determined the deferral benefits of a Proxy CT unit instead of a coal plant (Attachment 1). The resulting Proxy CT avoided capacity costs are shown in Attachment 3. In order to preserve the overall energy plus capacity net present value benefits from the coal plant, the alternative avoided energy costs were derived as follows:

- The difference between the annual avoided capacity and fixed O&M costs for the Proxy CT unit and the annual avoided capacity and fixed O&M costs for the coal plant was calculated.
- This difference was added to the annual avoided energy costs for the coal plant (as shown in Attachment 4).

Thus, the sum of the 2006 through 2025 annual avoided capacity and fixed O&M costs from the Proxy CT plus the alternative annual avoided energy costs equals the sum of the 2006 through 2025 annual avoided capacity and energy costs for the coal plant. However, now the annual allocation of capacity and energy avoided costs increases the value of the energy savings benefits of the DSM programs.

The resulting alternative avoided capacity and energy costs were used to derive alternative benefit/cost ratios for the individual proposed energy efficiency DSM programs, as shown in the alternative Exhibit 10 (pages 7-17 of this Exhibit). The alternative Exhibit 10 used the levelized rates for 2006-2025 for the purposes of estimating end effects.

Note: the resource plan supported by the Company is the one that includes the coal plant. The use of the Proxy CT was simply to explore the impact of different avoided costs on the cost-effectiveness of the proposed DSM programs.

**20-year Future DSM programs  
2006 HECO Fuel Price Forecast  
ATTACHMENT 1  
Alternative DSM Avoided Cost**

Exhibit B  
Page 3 of 17

For Alternative Avoided Costs using Proxy CT		
Year	With Future EE DSM	No Future EE DSM
2005	Substation DG (15 MW)	Substation DG (15 MW)
	Substation DG (15 MW)	Substation DG (15 MW)
2006	Future DSM: CIEE, CINC, CICR, REWH, RNC, ESH, RLI, REWH	Virtual DG
2007	PV (300 KW)	PV (300 KW)
2008		
2009	CIP CT 1 (113 MW) CIP CT 2 (113 MW) Wind (50 MW)	CIP CT 1 (113 MW) CIP CT 2 (113 MW) Wind (50 MW)
2010	-- Substation DG retired -- (30 MW)	--Substation DG retired -- (30 MW)  -- Virtual DG retired --
2011		
2012		
2013	Municipal Solid Waste (16 MW)	Municipal Solid Waste (16 MW)
2014		
2015	PV (300 KW)	Simple Cycle CT (113 MW)  PV (300 KW)
2016		
2017		
2018		
2019		
2020	PV (300 KW)	PV (300 KW)
2021		
2022		
2023		
2024	Simple Cycle CT (113 MW)	Simple Cycle CT (113 MW)
2025	PV (300 KW)	PV (300 KW)

**Notes:**

- (1) Plans are based on April 2006 short-term forecast extended beyond 2010 using the February 2004 S&P forecast escalations, 2006 HECO fuel price forecast, and 2006 GDPIPD forecast
- (2) "With DSM" plan includes future 2006-2025 EE DSM, while the "No DSM" plan excludes these impacts. Both plans include 1) acquired 1996-2005 EE DSM (2005 acq LFA's 1/10/06) 2) acquired and future RDLC and CIDLC (LFA files received 1/12/06)
- (3) CIP CT 1 (113 MW) - Simple Cycle Siemens CT at Campbell Industrial Park site  
CIP CT 2 (113 MW) - 2nd Simple Cycle Siemens CT at Campbell Industrial Park site  
Simple Cycle CT (113 MW) - Simple Cycle Siemens CT
- (4) CHP impacts assumes market size equivalent to no utility participation scenario
- (5) No HECO unit or IPP retirements
- (6) Virtual DG, in "no DSM" plan installed at MW levels equal to EE DSM programs

April 2006/February 2004 Sales and Peak Forecast escalation; 2006 HECO Fuel Price Forecast  
 ATTACHMENT 2  
 Alternative DSM Avoided Cost 20 year DSM

Avoided Energy Costs (\$/MWh) (11)	
	See "Other calcs" for derivation of augmented avoided energy rates
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
2021	
2022	
2023	
2024	
2025	



**April 2006/February 2004 Sales and Peak Forecast escalation; 2006 HECO Fuel Price Forecast**

**ATTACHMENT 3**

**Alternative DSM Avoided Cost 20 year DSM**

	Revenue Requirements			DSM Revenue Requirements (\$000) (15)	Avoided Revenue Requirements (\$000) (16)	Avoided Capital and Fixed O&M Costs (\$000) (17)	Coincident Peak Demand			Avoided Capital and Fixed O&M Costs (\$/kW-yr) (21)	PV Factor	PV cost using levelized rate dependent on DSM peak impacts
	with DSM (\$000) (12)	w/o DSM (\$000) (13)	Net Avoided Revenue Requirements (\$000) (14)				Peak with EE DSM (MW) (18)	Peak w/o EE DSM (MW) (19)	EE DSM Peak Reduction (MW) (20)			
2006	1,027,308	1,015,272	(12,036)	17,281	5,245	1,533	1,311.2	1,319.2	7.9	193	1.0000	1,080.04
2007	1,024,770	1,020,302	(4,468)	17,672	13,204	3,377	1,329.5	1,347.0	17.4	194	0.9210	2,183.05
2008	1,018,958	1,021,199	2,241	17,492	19,732	4,949	1,339.7	1,365.2	25.5	194	0.8482	2,941.46
2009	1,062,971	1,072,266	9,294	17,986	27,281	6,482	1,357.4	1,390.8	33.4	194	0.7812	3,546.90
2010	1,060,076	1,065,016	4,940	18,397	23,337	-	1,368.2	1,409.2	41.0	-	0.7195	4,016.21
2011	1,078,926	1,087,129	8,204	18,987	27,191	-	1,377.3	1,424.7	47.4	-	0.6626	4,271.80
2012	1,104,427	1,116,878	12,451	19,585	32,036	-	1,387.3	1,440.5	53.1	-	0.6103	4,408.94
2013	1,148,930	1,164,839	15,910	20,202	36,111	-	1,396.9	1,456.3	59.4	-	0.5621	4,543.58
2014	1,179,329	1,200,710	21,381	20,838	42,219	-	1,406.3	1,472.4	66.0	-	0.5176	4,649.25
2015	1,205,433	1,250,301	44,869	21,495	66,364	16,471	1,415.9	1,488.6	72.7	226	0.4767	4,717.05
2016	1,240,967	1,297,286	56,320	22,174	78,493	19,708	1,422.1	1,500.8	78.7	250	0.4391	4,700.73
2017	1,274,692	1,335,009	60,318	22,874	83,192	19,008	1,428.5	1,512.9	84.5	225	0.4044	4,646.65
2018	1,329,258	1,397,336	68,077	23,598	91,675	18,343	1,436.2	1,525.2	89.1	206	0.3724	4,511.98
2019	1,362,033	1,434,346	72,314	24,344	96,658	17,711	1,444.1	1,537.6	93.5	190	0.3430	4,360.41
2020	1,409,066	1,488,187	79,121	25,115	104,236	17,107	1,456.6	1,554.4	97.9	175	0.3159	4,204.87
2021	1,459,920	1,542,320	82,400	25,859	108,259	16,526	1,465.2	1,564.7	99.5	166	0.2909	3,939.23
2022	1,518,028	1,607,879	89,851	26,626	116,477	15,951	1,474.5	1,574.2	99.7	160	0.2680	3,632.91
2023	1,565,256	1,656,508	91,252	27,417	118,670	15,374	1,484.2	1,583.9	99.7	154	0.2468	3,346.90
2024	1,652,089	1,746,786	94,698	28,234	122,932	14,797	1,493.8	1,593.5	99.7	148	0.2273	3,083.40
2025	1,718,640	1,816,995	98,355	29,077	127,432	14,223	1,503.6	1,603.4	99.8	143	0.2093	2,840.64

Total (06-25) 1,340,744 201,563  
 NPV (06\$) \$498,546 \$75,626

75,626  
 Levelized (06-25) **136**  
 \$/kw-yr

**General Notes:**

Load forecast Apr 2006 (short). Sales/peaks beyond 2010 were derived using % increase from Feb 2004 Long Term Fcst  
 2006 HECO fuel price forecast  
 EE DSM based on .lfa files from Energy Services dated 3/22/06 and 3/23/06  
 LM based on the LFAs received on 3/22/06 and 3/28/06  
 CHP impacts assumes market size equivalent to no utility participation scenario (LFA received 12/14/05)  
 Assumes that HECO units and the IPP units do not retire  
 Assumed KPLP at 208 MW  
 2006 AOS EFORs reduced to 4-yr avg after 2nd CT  
 PS O&M 5 yr maint (2006 AOS); GPD LT maint  
 PV factor based on after-tax Cost of capital 8.579%  
 per 12/21/04 email from FAD

**Notes:**

- 12 Utility Cost from PRV System Cost Report for WDSM06CR0.sav.
- 13 Utility Cost from PRV System Cost Report for NDSM06CR0.sav.
- 14 Columns (13) minus column (12)
- 15 Diff in DSM cost for EE DSM prog (excl adjstmnts for T&D avd costs) from LFA Utility Cost from PRV System Cost Reports
- 16 Column (14) plus Column (15)
- 17 Column (16) minus column (7) with the 9.751% revenue tax removed
- 18 Final Peak from GAF Loads and Res Detail Report - WDSM06CR0.sav
- 19 Final Peak from GAF Loads and Res Detail Report - NDSM06CR0.sav
- 20 Column (19) minus column (18)
- 21 Column (17) divided by column (20)

# April 2006/February 2004 Sales and Peak Forecast escalation; 2006 HECO Fuel Price Forecast

## ATTACHMENT 4

### Alternative DSM Avoided Cost 20 year DSM

#### Alternative Avoided Energy

	Avoided Capital & Fixed O&M Costs [Coal Unit] (\$000)	Alternative Avoided Capital & Fixed O&M Costs [CT Proxy] (\$000)		Avoided Energy Cost [Coal Unit] (\$000)	Alternative Avoided Energy Cost (\$000)	EE DSM Energy (GWh)	Avoided Energy Costs (\$/MWh)
	(a)	(b)	Difference (c) = (a) - (b)	(d)	(e) = (c) + (d)	(f)	(g) = (e)/(f)
2006	1,533	1,533	-	3,245	3,245	28	117
2007	3,377	3,377	-	8,654	8,654	75	115
2008	4,949	4,949	-	13,030	13,030	119	109
2009	6,482	6,482	-	18,375	18,375	161	114
2010	-	-	-	21,263	21,263	201	106
2011	-	-	-	24,775	24,775	230	108
2012	-	-	-	29,190	29,190	262	111
2013	-	-	-	32,903	32,903	296	111
2014	-	-	-	38,468	38,468	330	117
2015	119,206	16,471	102,734	(54,628)	48,106	365	132
2016	143,598	19,708	123,890	(56,444)	67,446	397	170
2017	139,109	19,008	120,100	(54,107)	65,993	425	155
2018	134,771	18,343	116,428	(55,654)	60,774	450	135
2019	130,561	17,711	112,850	(55,444)	57,406	475	121
2020	126,508	17,107	109,401	(55,915)	53,486	499	107
2021	122,569	16,526	106,043	(55,186)	50,857	515	99
2022	118,744	15,951	102,793	(60,983)	41,810	521	80
2023	114,964	15,374	99,590	(62,197)	37,393	521	72
2024	(43,944)	14,797	(58,741)	76,974	18,233	522	35
2025	(79,499)	14,223	(93,722)	80,751	(12,970)	522	(25)

Total (06-25) 678,438  
NPV (06\$) \$299,671

PV cost using  
levelized rate  
dependent on  
DSM energy

PV Factor	
1.0000	2,988
0.9210	7,506
0.8482	10,915
0.7812	13,554
0.7195	15,612
0.6626	16,502
0.6103	17,281
0.5621	18,001
0.5176	18,462
0.4767	18,821
0.4391	18,854
0.4044	18,564
0.3724	18,135
0.3430	17,608
0.3159	17,050
0.2909	16,202
0.2680	15,089
0.2468	13,905
0.2273	12,814
0.2093	11,809

Levelized (06-25) 299,671  
**108.09**  
\$/MWh

**Cost Effectiveness Results -- 20-YEAR PLANNING HORIZON (2006-2025)**

Program	B/C Ratio		
	TRC	UC	PC
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	1.66	3.30	5.03
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	1.44	2.61	4.69
COMMERCIAL INDUSTRIAL CUSTOM REBATES	1.10	4.38	2.66
ENERGY SOLUTIONS FOR THE HOME	1.56	2.96	5.16
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	0.51	0.87	2.10
RESIDENTIAL NEW CONSTRUCTION PROGRAM	0.84	1.28	3.48
RESIDENTIAL LOW INCOME	4.31	2.10	NA
<b>TOTAL</b>	<b>1.24</b>	<b>2.47</b>	<b>3.92</b>

Cost Effectiveness Results -- 20-YEAR PLANNING HORIZON (2006-2025)

Program	Dollars			B/C Ratio
	Lifetime Benefits <sup>1</sup>	Lifetime Costs	Net Benefits	
<b>Total Resource Cost Test Results:</b>				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$156,147,781	\$94,308,896	\$61,838,885	1.66
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$61,106,538	\$42,562,089	\$18,544,449	1.44
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$108,866,518	\$98,819,764	\$10,046,754	1.10
ENERGY SOLUTIONS FOR THE HOME	\$66,842,820	\$42,807,877	\$24,034,943	1.56
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$34,119,037	\$66,560,103	(\$32,441,066)	0.51
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$35,525,657	\$42,441,563	(\$6,915,906)	0.84
RESIDENTIAL LOW INCOME	\$27,760,368	\$6,437,703	\$21,322,665	4.31
<b>TOTAL</b>	<b>\$490,368,720</b>	<b>\$393,937,996</b>	<b>\$96,430,724</b>	<b>1.24</b>
<b>Utility Cost Test Results:</b>				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$156,147,781	\$47,257,501	\$108,890,281	3.30
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$61,106,538	\$23,369,990	\$37,736,548	2.61
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$108,866,518	\$24,840,922	\$84,025,597	4.38
ENERGY SOLUTIONS FOR THE HOME	\$66,842,820	\$22,594,415	\$44,248,405	2.96
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$34,119,037	\$39,196,089	(\$5,077,052)	0.87
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$35,525,657	\$27,702,435	\$7,823,222	1.28
RESIDENTIAL LOW INCOME	\$27,760,368	\$13,229,064	\$14,531,304	2.10
<b>TOTAL</b>	<b>\$490,368,720</b>	<b>\$198,190,415</b>	<b>\$292,178,304</b>	<b>2.47</b>
<b>Ratepayer Impact Measure Test Results:</b>				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$156,147,781	\$329,581,395	(\$173,433,614)	0.47
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$61,106,538	\$133,939,761	(\$72,833,223)	0.46
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$108,866,518	\$227,201,725	(\$118,335,207)	0.48
ENERGY SOLUTIONS FOR THE HOME	\$66,842,820	\$134,457,721	(\$67,614,901)	0.50
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$34,119,037	\$106,336,850	(\$72,217,814)	0.32
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$35,525,657	\$86,929,026	(\$51,403,369)	0.41
RESIDENTIAL LOW INCOME	\$27,760,368	\$67,294,197	(\$39,533,829)	0.41
<b>TOTAL</b>	<b>\$490,368,720</b>	<b>\$1,085,740,677</b>	<b>(\$595,371,957)</b>	<b>0.45</b>
<b>Participant Test Results:</b>				
COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	\$282,323,895	\$56,115,411	\$226,208,483	5.03
COMMERCIAL INDUSTRIAL NEW CONSTRUCTION	\$110,569,771	\$23,552,317	\$87,017,454	4.69
COMMERCIAL INDUSTRIAL CUSTOM REBATES	\$202,360,803	\$76,046,097	\$126,314,707	2.66
ENERGY SOLUTIONS FOR THE HOME	\$111,863,306	\$21,678,462	\$90,184,844	5.16
RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	\$67,140,761	\$31,957,349	\$35,183,413	2.10
RESIDENTIAL NEW CONSTRUCTION PROGRAM	\$59,226,591	\$17,036,425	\$42,190,166	3.48
RESIDENTIAL LOW INCOME	\$54,065,133	\$0	\$54,065,133	NA
<b>TOTAL</b>	<b>\$887,550,261</b>	<b>\$226,386,061</b>	<b>\$661,164,200</b>	<b>3.92</b>

<sup>1</sup> Avoided costs based on HECO System Planning estimates (alternative allocation)

# Cost Effectiveness Analysis - Input Summary Table

## HECO ENERGY EFFICIENCY DOCKET

### General Data

Discount Rate (%)	8.09%
General Escalation Rate (%)	2.20%
Avoided Costs Escalation Rate	2.20%
Program Start Year	2006
Analysis Framework	20-YEAR PLANNING HORIZON
Externality Factor:	0%
Table Titles:	DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY
Customer to Generation Ratio:	11.17%

### FROM Docket DSM Backup Sheets (date).xls FILE:

#### Program-Specific Data

Program	Program Name	Measure Lifetime	Net to Gross Ratio <sup>1</sup>		Retail Rate <sup>2</sup>	
			Energy	Demand	Energy (\$/kWh)	Demand (\$/kW)
1. CIEE	COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY	15	0.6530	0.6640	0.161	46
2. CINC	COMMERCIAL INDUSTRIAL NEW CONTRUCTION	15	0.5960	0.6100	0.161	46
3. CICR	COMMERCIAL INDUSTRIAL CUSTOM REBATES	15	0.7590	0.7550	0.161	46
4. ESH	ENERGY SOLUTIONS FOR THE HOME	15	0.8500	0.8500	0.197	0
5. REWH	RESIDENTIAL EFFICIENT WATER HEATING PROGRAM	15	0.7290	0.7310	0.197	0
6. RNC	RESIDENTIAL NEW CONSTRUCTION PROGRAM	15	0.8410	0.8850	0.197	0
7. RLJ	RESIDENTIAL LOW INCOME	15	1.0000	1.0000	0.197	0
8. RDLC	RESIDENTIAL DIRECT LOAD CONTROL	15	1.0000	1.0000	0.197	0
9. CIDLC	COMMERCIAL INDUSTRIAL DIRECT LOAD CONTROL	15	1.0000	1.0000	0.161	46

1. Source: HECO A&S Report for existing programs; estimated values for new programs based on program experience.

2. Source: October 2005 recorded revenue per kwh for residential and commercial (Scheds J & P) customers. ECAF based on \$59.71/bbl LSFO.

TABLE 1. CIEE: DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: COMMERCIAL INDUSTRIAL ENERGY EFFICIENCY

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefits	Costs	Net Benefits	B/C Ratio
Participant Test	\$282,323,895	\$56,115,411	\$226,208,483	5.03
Ratepayer Impact Measure Test	\$156,147,781	\$329,581,395	(\$173,433,614)	0.47
Utility Cost Test	\$156,147,781	\$47,257,501	\$108,890,281	3.30
Total Resource Cost Test	\$156,147,781	\$94,308,896	\$61,838,885	1.66

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>Cumulative Savings (Net System Level)</b>																				
Peak Demand Reduction (kW)	2,284	4,567	6,851	9,135	11,418	13,697	15,661	17,500	19,493	21,396	22,384	23,373	24,361	25,349	26,337	27,323	27,305	27,337	27,369	27,401
Energy Savings (kWh)	15,266,176	30,532,351	45,798,527	61,064,703	76,330,878	91,575,903	105,015,883	118,281,870	131,429,865	144,577,860	151,432,516	158,287,172	165,141,829	171,996,485	178,851,141	185,418,506	185,775,374	186,132,243	186,489,111	186,845,980
<b>Rates</b>																				
Demand (\$/kW)	\$46.00	\$47.01	\$48.05	\$49.10	\$50.18	\$51.29	\$52.42	\$53.57	\$54.75	\$55.95	\$57.18	\$58.44	\$59.73	\$61.04	\$62.38	\$63.76	\$65.16	\$66.59	\$68.06	\$69.55
Energy (\$/kWh)	\$0.1611	\$0.1646	\$0.1683	\$0.1720	\$0.1758	\$0.1796	\$0.1836	\$0.1876	\$0.1917	\$0.1960	\$0.2003	\$0.2047	\$0.2092	\$0.2138	\$0.2185	\$0.2233	\$0.2282	\$0.2332	\$0.2383	\$0.2436
<b>BENEFIT CALCULATIONS:</b>																				
<b>Avoided Costs (Utility, Ratepayer)</b>																				
<b>NPV</b>																				
Demand	\$411,813	\$826,383	\$1,241,887	\$1,656,314	\$0	\$0	\$0	\$0	\$0	\$4,523,959	\$5,233,646	\$4,910,745	\$4,684,830	\$4,485,678	\$4,299,310	\$4,228,109	\$4,080,196	\$3,936,130	\$3,791,524	\$3,647,738
Energy	\$1,673,423	\$3,271,983	\$4,680,273	\$6,527,081	\$7,549,405	\$9,194,897	\$10,925,926	\$12,264,198	\$14,307,415	\$17,781,206	\$24,006,410	\$22,965,006	\$20,802,491	\$19,412,824	\$17,888,466	\$17,091,037	\$13,921,612	\$12,467,172	\$6,087,091	-\$4,335,728
Total	\$156,147,781	\$2,085,236	\$4,098,367	\$5,922,160	\$8,183,395	\$7,549,405	\$9,194,897	\$10,925,926	\$12,264,198	\$14,307,415	\$22,305,165	\$29,240,056	\$27,875,750	\$25,487,321	\$23,898,502	\$22,187,775	\$21,319,146	\$18,001,808	\$16,403,302	\$9,878,615
<b>Avoided Costs (Total Resource)</b>																				
Demand	\$411,813	\$826,383	\$1,241,887	\$1,656,314	\$0	\$0	\$0	\$0	\$0	\$4,523,959	\$5,233,646	\$4,910,745	\$4,684,830	\$4,485,678	\$4,299,310	\$4,228,109	\$4,080,196	\$3,936,130	\$3,791,524	\$3,647,738
Energy	\$1,673,423	\$3,271,983	\$4,680,273	\$6,527,081	\$7,549,405	\$9,194,897	\$10,925,926	\$12,264,198	\$14,307,415	\$17,781,206	\$24,006,410	\$22,965,006	\$20,802,491	\$19,412,824	\$17,888,466	\$17,091,037	\$13,921,612	\$12,467,172	\$6,087,091	-\$4,335,728
Total	\$156,147,781	\$2,085,236	\$4,098,367	\$5,922,160	\$8,183,395	\$7,549,405	\$9,194,897	\$10,925,926	\$12,264,198	\$14,307,415	\$22,305,165	\$29,240,056	\$27,875,750	\$25,487,321	\$23,898,502	\$22,187,775	\$21,319,146	\$18,001,808	\$16,403,302	\$9,878,615
<b>Avoided Costs (Participant)</b>																				
Demand	\$105,047	\$214,716	\$329,160	\$448,536	\$573,004	\$702,497	\$820,911	\$942,290	\$1,067,199	\$1,197,147	\$1,279,998	\$1,365,915	\$1,454,994	\$1,547,330	\$1,643,025	\$1,738,849	\$1,779,185	\$1,820,156	\$1,862,680	\$1,905,882
Energy	\$2,459,381	\$5,026,975	\$7,706,352	\$10,501,180	\$13,415,269	\$16,448,687	\$19,277,730	\$22,190,648	\$25,199,781	\$28,330,575	\$30,326,594	\$32,396,725	\$34,543,265	\$36,768,571	\$39,075,073	\$41,401,117	\$42,393,378	\$43,409,260	\$44,449,322	\$45,514,138
Total	\$282,323,895	\$2,564,428	\$5,241,691	\$8,035,512	\$10,949,725	\$13,988,273	\$17,151,183	\$20,098,641	\$23,132,939	\$26,266,980	\$29,527,723	\$31,606,592	\$33,762,641	\$35,998,258	\$38,315,901	\$40,718,098	\$43,139,965	\$44,172,563	\$45,229,715	\$46,312,003
<b>COST CALCULATIONS:</b>																				
<b>Cost Inputs:</b>																				
Implementation	\$1,612,906	\$1,643,834	\$1,687,036	\$1,717,067	\$1,759,590	\$1,821,017	\$1,884,659	\$1,950,597	\$2,018,916	\$2,089,703	\$2,163,050	\$2,239,051	\$2,317,803	\$2,399,409	\$2,483,973	\$2,571,605	\$2,662,419	\$2,756,531	\$2,854,064	\$2,955,145
Incentives	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,265,425	\$2,315,264	\$2,366,200	\$2,418,257	\$2,471,458	\$2,525,830	\$2,581,398	\$2,638,189	\$2,696,229	\$2,755,546	\$2,816,168	\$2,878,124	\$2,941,443	\$3,006,155	\$3,072,290	\$3,139,880
Participant	\$5,917,290	\$6,047,470	\$6,180,515	\$6,316,486	\$6,455,449	\$6,597,469	\$6,742,613	\$6,890,950	\$7,042,551	\$7,197,487	\$7,355,832	\$7,517,660	\$7,683,049	\$7,852,076	\$8,024,822	\$8,201,368	\$8,381,798	\$8,566,197	\$8,754,654	\$8,947,256
<b>NEV</b>																				
<b>Total Participant Costs</b>	\$56,115,411	\$4,437,967	\$4,568,148	\$4,701,192	\$4,837,164	\$4,976,126	\$5,085,601	\$5,197,484	\$5,311,829	\$5,428,689	\$5,548,120	\$5,670,179	\$5,794,923	\$5,922,411	\$6,052,704	\$6,185,864	\$6,321,953	\$6,461,036	\$6,603,178	\$6,748,448
<b>Total RIM Costs</b>	\$329,581,395	\$6,442,759	\$9,150,950	\$11,987,973	\$14,932,217	\$18,013,288	\$21,287,465	\$24,349,500	\$27,501,792	\$30,757,354	\$34,143,256	\$36,351,041	\$38,639,881	\$41,012,291	\$43,470,856	\$46,018,239	\$48,589,694	\$49,776,424	\$50,992,401	\$52,238,357
<b>Total Utility Costs</b>	\$47,257,501	\$3,878,331	\$3,909,259	\$3,952,461	\$3,982,492	\$4,025,015	\$4,136,281	\$4,250,859	\$4,368,854	\$4,490,374	\$4,615,334	\$4,744,449	\$4,877,240	\$5,014,032	\$5,154,955	\$5,300,141	\$5,449,729	\$5,603,861	\$5,762,686	\$5,926,354
<b>Total TRC Costs</b>	\$94,308,896	\$7,530,196	\$7,691,304	\$7,867,551	\$8,033,553	\$8,215,038	\$8,418,486	\$8,627,272	\$8,841,548	\$9,061,467	\$9,287,191	\$9,518,882	\$9,756,711	\$10,000,852	\$10,251,485	\$10,508,795	\$10,772,973	\$11,044,216	\$11,322,728	\$11,608,718

TABLE 2. CINC: DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: COMMERCIAL INDUSTRIAL NEW CONSTRUCTION

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefits	Costs	Net Benefits	B/C Ratio
Participant Test	\$110,569,771	\$23,552,317	\$87,017,454	4.69
Ratepayer Impact Measure Test	\$61,106,538	\$133,939,761	(\$72,833,223)	0.46
Utility Cost Test	\$61,106,538	\$23,369,990	\$37,736,548	2.61
Total Resource Cost Test	\$61,106,538	\$42,562,089	\$18,544,449	1.44

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cumulative Savings (Net System Level)																				
Peak Demand Reduction (kW)	874	1,747	2,621	3,494	4,368	5,235	6,013	6,765	7,506	8,246	8,763	9,279	9,796	10,312	10,829	11,194	11,194	11,194	11,194	11,194
Energy Savings (kWh)	5,823,049	11,646,098	17,469,147	23,292,196	29,115,244	34,908,090	40,135,614	45,239,107	50,288,753	55,338,400	58,668,649	61,998,897	65,329,145	68,659,393	71,989,642	74,068,615	74,068,615	74,068,615	74,068,615	74,068,615
Rates																				
Demand (\$/kW)	\$46.00	\$47.01	\$48.05	\$49.10	\$50.18	\$51.29	\$52.42	\$53.57	\$54.75	\$55.95	\$57.18	\$58.44	\$59.73	\$61.04	\$62.38	\$63.76	\$65.16	\$66.59	\$68.06	\$69.55
Energy (\$/kWh)	\$0.1611	\$0.1646	\$0.1683	\$0.1720	\$0.1758	\$0.1796	\$0.1836	\$0.1876	\$0.1917	\$0.1960	\$0.2003	\$0.2047	\$0.2092	\$0.2138	\$0.2185	\$0.2233	\$0.2282	\$0.2332	\$0.2383	\$0.2436
BENEFIT CALCULATIONS:																				
Avoided Costs (Utility, Ratepayer)	NPV																			
Demand		\$157,526	\$316,106	\$475,043	\$633,569	\$0	\$0	\$0	\$0	\$1,743,583	\$2,048,821	\$1,949,657	\$1,883,845	\$1,824,846	\$1,767,718	\$1,735,386	\$1,672,717	\$1,611,769	\$1,550,743	\$1,490,194
Energy		\$638,302	\$1,248,048	\$1,785,218	\$2,489,655	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$6,805,907	\$9,300,668	\$8,995,075	\$8,229,344	\$7,749,418	\$7,200,313	\$6,827,309	\$5,550,545	\$4,961,129	\$2,417,634
Total	\$61,106,538	\$795,827	\$1,564,154	\$2,260,261	\$3,123,224	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$8,549,491	\$11,349,489	\$10,944,732	\$10,113,189	\$9,574,264	\$8,968,032	\$8,562,695	\$7,223,261	\$6,572,899	\$3,968,377
Avoided Costs (Total Resource)																				
Demand		\$157,526	\$316,106	\$475,043	\$633,569	\$0	\$0	\$0	\$0	\$1,743,583	\$2,048,821	\$1,949,657	\$1,883,845	\$1,824,846	\$1,767,718	\$1,735,386	\$1,672,717	\$1,611,769	\$1,550,743	\$1,490,194
Energy		\$638,302	\$1,248,048	\$1,785,218	\$2,489,655	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$6,805,907	\$9,300,668	\$8,995,075	\$8,229,344	\$7,749,418	\$7,200,313	\$6,827,309	\$5,550,545	\$4,961,129	\$2,417,634
Total	\$61,106,538	\$795,827	\$1,564,154	\$2,260,261	\$3,123,224	\$2,879,605	\$3,505,030	\$4,175,737	\$4,690,671	\$5,474,419	\$8,549,491	\$11,349,489	\$10,944,732	\$10,113,189	\$9,574,264	\$8,968,032	\$8,562,695	\$7,223,261	\$6,572,899	\$3,968,377
Avoided Costs (Participant)																				
Demand		\$40,182	\$82,133	\$125,909	\$171,573	\$219,184	\$268,499	\$315,170	\$362,408	\$410,921	\$461,394	\$501,082	\$542,294	\$585,076	\$629,479	\$675,551	\$713,693	\$729,395	\$745,441	\$761,844
Energy		\$938,093	\$1,917,462	\$2,939,470	\$4,005,518	\$5,117,040	\$6,270,124	\$7,367,681	\$8,487,227	\$9,642,143	\$10,843,768	\$11,749,262	\$12,689,349	\$13,665,114	\$14,677,671	\$15,728,166	\$16,838,389	\$16,902,234	\$17,274,083	\$17,654,113
Total	\$110,569,771	\$978,276	\$1,999,595	\$3,065,379	\$4,177,090	\$5,336,233	\$6,538,622	\$7,682,851	\$8,849,635	\$10,053,064	\$11,305,161	\$12,250,344	\$13,231,643	\$14,250,190	\$15,307,150	\$16,403,718	\$17,252,082	\$17,631,628	\$18,019,524	\$18,415,954
COST CALCULATIONS:																				
Cost Inputs:																				
Implementation		\$947,623	\$978,219	\$1,000,092	\$1,023,034	\$1,042,763	\$1,080,141	\$1,118,891	\$1,159,062	\$1,200,709	\$1,243,885	\$1,288,648	\$1,335,057	\$1,383,173	\$1,433,060	\$1,484,783	\$1,538,413	\$1,594,018	\$1,651,674	\$1,711,457
Incentives		\$936,020	\$936,020	\$936,020	\$936,020	\$936,020	\$956,613	\$977,658	\$999,167	\$1,021,148	\$1,043,614	\$1,066,573	\$1,090,038	\$1,114,019	\$1,138,527	\$1,163,575	\$1,189,173	\$1,215,335	\$1,242,072	\$1,269,398
Participant		\$2,424,795	\$2,478,141	\$2,532,660	\$2,588,378	\$2,645,322	\$2,703,520	\$2,762,997	\$2,823,783	\$2,885,906	\$2,949,396	\$3,014,283	\$3,080,597	\$3,148,370	\$3,217,634	\$3,288,422	\$3,360,768	\$3,434,704	\$3,510,268	\$3,587,494
Total Participant Costs	NPV																			
	\$23,552,317	\$1,866,927	\$1,920,272	\$1,974,792	\$2,030,510	\$2,087,454	\$2,133,378	\$2,180,313	\$2,228,280	\$2,277,302	\$2,327,402	\$2,378,605	\$2,430,935	\$2,484,415	\$2,539,072	\$2,594,932	\$2,652,020	\$2,710,365	\$2,769,993	\$2,830,933
Total RIM Costs	\$133,939,761	\$2,861,918	\$3,913,834	\$5,001,492	\$6,136,145	\$7,315,016	\$8,575,376	\$9,779,401	\$11,007,864	\$12,274,921	\$13,592,660	\$14,605,565	\$15,656,738	\$16,747,382	\$17,878,736	\$19,052,076	\$19,979,668	\$20,440,982	\$20,913,271	\$21,396,809
Total Utility Costs	\$23,369,990	\$1,883,643	\$1,914,239	\$1,936,112	\$1,959,054	\$1,978,783	\$2,036,754	\$2,096,549	\$2,158,229	\$2,221,857	\$2,287,499	\$2,355,221	\$2,425,095	\$2,497,191	\$2,571,587	\$2,648,358	\$2,727,586	\$2,809,353	\$2,893,747	\$2,980,855
Total TRC Costs	\$42,562,089	\$3,372,418	\$3,456,359	\$3,532,752	\$3,611,412	\$3,688,085	\$3,783,661	\$3,881,888	\$3,982,845	\$4,086,615	\$4,193,281	\$4,302,931	\$4,415,654	\$4,531,543	\$4,650,694	\$4,773,206	\$4,899,180	\$5,028,723	\$5,161,942	\$5,298,951

TABLE 3. CIGR: DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: COMMERCIAL INDUSTRIAL CUSTOM REBATES

Item	Unit	Price	Quantity	Total
1.000	kg	1.000	1.000	1.000
2.000	kg	2.000	2.000	2.000
3.000	kg	3.000	3.000	3.000
4.000	kg	4.000	4.000	4.000
5.000	kg	5.000	5.000	5.000
6.000	kg	6.000	6.000	6.000
7.000	kg	7.000	7.000	7.000
8.000	kg	8.000	8.000	8.000
9.000	kg	9.000	9.000	9.000
10.000	kg	10.000	10.000	10.000
11.000	kg	11.000	11.000	11.000
12.000	kg	12.000	12.000	12.000
13.000	kg	13.000	13.000	13.000
14.000	kg	14.000	14.000	14.000
15.000	kg	15.000	15.000	15.000
16.000	kg	16.000	16.000	16.000
17.000	kg	17.000	17.000	17.000
18.000	kg	18.000	18.000	18.000
19.000	kg	19.000	19.000	19.000
20.000	kg	20.000	20.000	20.000
21.000	kg	21.000	21.000	21.000
22.000	kg	22.000	22.000	22.000
23.000	kg	23.000	23.000	23.000
24.000	kg	24.000	24.000	24.000
25.000	kg	25.000	25.000	25.000
26.000	kg	26.000	26.000	26.000
27.000	kg	27.000	27.000	27.000
28.000	kg	28.000	28.000	28.000
29.000	kg	29.000	29.000	29.000
30.000	kg	30.000	30.000	30.000
31.000	kg	31.000	31.000	31.000
32.000	kg	32.000	32.000	32.000
33.000	kg	33.000	33.000	33.000
34.000	kg	34.000	34.000	34.000
35.000	kg	35.000	35.000	35.000
36.000	kg	36.000	36.000	36.000
37.000	kg	37.000	37.000	37.000
38.000	kg	38.000	38.000	38.000
39.000	kg	39.000	39.000	39.000
40.000	kg	40.000	40.000	40.000
41.000	kg	41.000	41.000	41.000
42.000	kg	42.000	42.000	42.000
43.000	kg	43.000	43.000	43.000
44.000	kg	44.000	44.000	44.000
45.000	kg	45.000	45.000	45.000
46.000	kg	46.000	46.000	46.000
47.000	kg	47.000	47.000	47.000
48.000	kg	48.000	48.000	48.000
49.000	kg	49.000	49.000	49.000
50.000	kg	50.000	50.000	50.000
51.000	kg	51.000	51.000	51.000
52.000	kg	52.000	52.000	52.000
53.000	kg	53.000	53.000	53.000
54.000	kg	54.000	54.000	54.000
55.000	kg	55.000	55.000	55.000
56.000	kg	56.000	56.000	56.000
57.000	kg	57.000	57.000	57.000
58.000	kg	58.000	58.000	58.000
59.000	kg	59.000	59.000	59.000
60.000	kg	60.000	60.000	60.000
61.000	kg	61.000	61.000	61.000
62.000	kg	62.000	62.000	62.000
63.000	kg	63.000	63.000	63.000
64.000	kg	64.000	64.000	64.000
65.000	kg	65.000	65.000	65.000
66.000	kg	66.000	66.000	66.000



TABLE 4. ESH: DETAILED SUMMARY FOR 2006 START YEAR - 20-YEAR PLANNING HORIZON SUMMARY

Discount Rate		2.2%		8%	
Measure Lifetime (Years)		15			
Cumulative Savings (Net System Level)					
Peak Demand Reduction (kW)		4,053	32,203,247	38,274,251	42,468,421
Energy Savings (kWh)		16,913,443	26,133,247	32,203,247	38,274,251
Energy (\$/kWh)		\$0.00	\$0.00	\$0.2147	\$0.2101
2006		2007	2008	2009	2010
NEP					
Total		\$66,842,820	\$66,842,820	\$66,842,820	\$66,842,820
Demand		\$730,906	\$1,255,514	\$1,589,979	\$1,922,442
Energy		\$1,775,310	\$2,800,556	\$3,290,987	\$4,001,956
Avoided Costs (Utility Ratecap)		\$2,506,016	\$4,056,070	\$4,880,966	\$6,013,698
Total		\$66,842,820	\$66,842,820	\$66,842,820	\$66,842,820
COST CALCULATIONS:					
Total		\$11,186,306	\$5,256,169	\$6,617,624	\$8,040,536
Demand		\$0	\$0	\$0	\$0
Energy		\$1,186,448	\$5,256,169	\$6,617,624	\$8,040,536
Avoided Costs (Participant)		\$0	\$0	\$0	\$0
Total		\$11,186,306	\$5,256,169	\$6,617,624	\$8,040,536
COST CALCULATIONS:					
Total		\$11,186,306	\$5,256,169	\$6,617,624	\$8,040,536
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COST CALCULATIONS:					
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Avoided Costs (Participant)		\$0	\$0	\$0	\$0
Total		\$11,186,306	\$5,256,169	\$6,617,624	\$8,040,536
COST CALCULATIONS:					
Total		\$11,186,306	\$5,256,169	\$6,617,624	\$8,040,536
Demand		\$0	\$0	\$0	

TABLE 5. REWH: DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: RESIDENTIAL EFFICIENT WATER HEATING PROGRAM

Discount Rate	8%
General Escalation Rate	2.2%
Measure Lifetime (years)	15

	Benefits	Costs	Net Benefits	B/C Ratio
Participant Test	\$67,140,761	\$31,957,349	\$35,183,413	2.10
Ratepayer Impact Measure Test	\$34,119,037	\$106,336,850	(\$72,217,814)	0.32
Utility Cost Test	\$34,119,037	\$39,196,089	(\$5,077,052)	0.87
Total Resource Cost Test	\$34,119,037	\$66,560,103	(\$32,441,066)	0.51

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025		
Cumulative Savings (Net System Level)																						
Peak Demand Reduction (kW)	631	1,263	1,894	2,525	3,157	3,788	4,419	5,051	5,682	6,274	6,866	7,459	8,051	8,643	9,235	9,235	9,235	9,235	9,235	9,235		
Energy Savings (kWh)	2,745,957	5,491,915	8,237,872	10,983,830	13,729,787	16,475,745	19,221,702	21,967,660	24,713,617	27,275,745	29,837,872	32,400,000	34,962,128	37,524,255	40,086,383	40,086,383	40,086,383	40,086,383	40,086,383	40,086,383		
Rates																						
Demand (\$/kW)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		
Energy (\$/kWh)	\$0.1968	\$0.2011	\$0.2056	\$0.2101	\$0.2147	\$0.2194	\$0.2242	\$0.2292	\$0.2342	\$0.2394	\$0.2446	\$0.2500	\$0.2555	\$0.2611	\$0.2669	\$0.2728	\$0.2788	\$0.2849	\$0.2912	\$0.2976		
BENEFIT CALCULATIONS:																						
Avoided Costs (Utility, Ratepayer)	NPV																					
Demand	\$113,852	\$228,466	\$343,338	\$457,913	\$0	\$0	\$0	\$0	\$0	\$1,326,632	\$1,605,439	\$1,567,111	\$1,548,246	\$1,529,423	\$1,507,539	\$1,431,690	\$1,379,988	\$1,329,707	\$1,279,360	\$1,229,408		
Energy	\$301,002	\$588,538	\$841,850	\$1,174,039	\$1,357,926	\$1,654,286	\$1,999,839	\$2,277,743	\$2,690,317	\$3,354,564	\$4,730,161	\$4,700,736	\$4,404,089	\$4,235,271	\$4,009,390	\$3,694,981	\$3,003,988	\$2,684,993	\$1,308,438	-\$930,197		
Total	\$34,119,037	\$414,854	\$817,004	\$1,185,188	\$1,631,952	\$1,357,926	\$1,654,286	\$1,999,839	\$2,277,743	\$2,690,317	\$4,681,195	\$6,335,600	\$6,267,846	\$5,952,335	\$5,764,694	\$5,516,928	\$5,126,671	\$4,383,977	\$4,014,700	\$2,587,799	\$299,210	
Avoided Costs (Total Resource)																						
Demand	\$113,852	\$228,466	\$343,338	\$457,913	\$0	\$0	\$0	\$0	\$0	\$1,326,632	\$1,605,439	\$1,567,111	\$1,548,246	\$1,529,423	\$1,507,539	\$1,431,690	\$1,379,988	\$1,329,707	\$1,279,360	\$1,229,408		
Energy	\$301,002	\$588,538	\$841,850	\$1,174,039	\$1,357,926	\$1,654,286	\$1,999,839	\$2,277,743	\$2,690,317	\$3,354,564	\$4,730,161	\$4,700,736	\$4,404,089	\$4,235,271	\$4,009,390	\$3,694,981	\$3,003,988	\$2,684,993	\$1,308,438	-\$930,197		
Total	\$34,119,037	\$414,854	\$817,004	\$1,185,188	\$1,631,952	\$1,357,926	\$1,654,286	\$1,999,839	\$2,277,743	\$2,690,317	\$4,681,195	\$6,335,600	\$6,267,846	\$5,952,335	\$5,764,694	\$5,516,928	\$5,126,671	\$4,383,977	\$4,014,700	\$2,587,799	\$299,210	
Avoided Costs (Participant)																						
Demand	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Energy	\$540,404	\$1,104,587	\$1,693,331	\$2,307,446	\$2,947,762	\$3,615,136	\$4,310,447	\$5,034,602	\$5,788,534	\$6,529,197	\$7,299,648	\$8,100,838	\$8,933,748	\$9,799,385	\$10,698,786	\$10,934,159	\$11,174,711	\$11,420,555	\$11,671,807	\$11,928,587		
Total	\$67,140,761	\$540,404	\$1,104,587	\$1,693,331	\$2,307,446	\$2,947,762	\$3,615,136	\$4,310,447	\$5,034,602	\$5,788,534	\$6,529,197	\$7,299,648	\$8,100,838	\$8,933,748	\$9,799,385	\$10,698,786	\$10,934,159	\$11,174,711	\$11,420,555	\$11,671,807	\$11,928,587	
COST CALCULATIONS:																						
Cost Inputs:																						
Implementation	\$1,651,667	\$1,676,211	\$1,737,552	\$1,794,149	\$1,854,637	\$1,921,585	\$1,991,000	\$2,062,973	\$2,137,600	\$2,214,980	\$2,295,216	\$2,378,414	\$2,464,685	\$2,554,144	\$2,646,910	\$2,743,107	\$2,842,863	\$2,946,311	\$3,053,589	\$3,164,841		
Incentives	\$1,470,000	\$1,470,000	\$1,470,000	\$1,470,000	\$1,470,000	\$1,502,340	\$1,535,391	\$1,569,170	\$1,603,692	\$1,638,973	\$1,675,030	\$1,711,881	\$1,749,543	\$1,788,032	\$1,827,369	\$1,867,571	\$1,908,658	\$1,950,648	\$1,993,563	\$2,037,421		
Participant	\$2,551,500	\$2,607,633	\$3,944,201	\$4,030,974	\$4,119,655	\$4,210,288	\$4,302,914	\$4,397,578	\$4,494,325	\$4,593,200	\$4,694,250	\$4,797,524	\$4,903,069	\$5,010,937	\$5,121,178	\$5,233,843	\$5,348,988	\$5,466,666	\$5,586,932	\$5,709,845		
Total Participant Costs	NPV	\$31,957,349	\$1,479,870	\$1,536,003	\$2,872,571	\$2,959,344	\$3,048,025	\$3,115,082	\$3,183,614	\$3,253,653	\$3,325,233	\$3,398,389	\$3,473,153	\$3,549,562	\$3,627,653	\$3,707,461	\$3,789,025	\$3,872,384	\$3,957,576	\$4,044,643	\$4,133,625	\$4,224,565
Total RIM Costs	\$106,336,850	\$3,662,071	\$4,250,798	\$4,900,883	\$5,571,595	\$6,272,400	\$7,039,061	\$7,836,838	\$8,666,745	\$9,529,826	\$10,383,150	\$11,269,894	\$12,191,133	\$13,147,975	\$14,141,561	\$15,173,065	\$15,544,838	\$15,926,232	\$16,317,514	\$16,718,959	\$17,130,849	
Total Utility Costs	\$39,196,089	\$3,121,667	\$3,146,211	\$3,207,552	\$3,264,149	\$3,324,637	\$3,423,925	\$3,526,391	\$3,632,143	\$3,741,292	\$3,853,953	\$3,970,246	\$4,090,295	\$4,214,227	\$4,342,176	\$4,474,279	\$4,610,678	\$4,751,521	\$4,896,959	\$5,047,152	\$5,202,262	
Total TRC Costs	\$66,560,103	\$4,203,167	\$4,283,844	\$5,681,753	\$5,825,122	\$5,974,292	\$6,131,873	\$6,293,914	\$6,460,551	\$6,631,925	\$6,808,180	\$6,989,466	\$7,175,937	\$7,367,754	\$7,565,081	\$7,768,088	\$7,976,950	\$8,191,851	\$8,412,977	\$8,640,522	\$8,874,686	

**TABLE 6. RNC: DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY**

Discount Rate		8%
General Escalation Rate		2.2%
Measure Lifetime (years)		15

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cumulative Savings (Net System Level)																				
Total Demand Reduction (kW)																				
Energy Savings (kWh)																				
Rate																				
Demand (\$/kW)																				
Energy (\$/kWh)																				
NPV																				
Avoided Costs (Utility, Ratepay)																				
Demand																				
Energy																				
Total																				
Avoided Costs (Total Resource)																				
Demand																				
Energy																				
Total																				
Avoided Costs (Participant)																				
Demand																				
Energy																				
Total																				
COST CALCULATIONS:																				
Cost Inputs:																				
Implementation																				
Incentives																				
Participant																				
Total Participant Costs																				
Total RIM Costs																				
Total Utility Costs																				
Total TRC Costs																				

TABLE 7. RL1: DETAILED SUMMARY FOR 2006 START YEAR -- 20-YEAR PLANNING HORIZON SUMMARY  
PROGRAM NAME: RESIDENTIAL LOW INCOME

Discount Rate	8%	2.2%	15%
General Escalation Rate			
Measure Lifetime (years)			

  

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>Participant Test</b>	\$54,065,133	\$54,065,133	NA																	
<b>Ratepayer Impact Measure Test</b>	\$67,294,197	\$39,533,629	0.41																	
<b>Indiv. Cost Test</b>	\$13,229,064	\$14,531,304	2.10																	
<b>Total Resource Cost Test</b>	\$6,437,703	\$21,332,605	4.31																	

  

<b>Cumulative Savings (Net System Level)</b>																				
Peak Demand Reduction (kW)	591	1,182	1,773	2,364	2,954	3,541	3,807	4,233	4,659	5,085	5,511	5,937	6,363	6,789	7,215	7,215	7,215	7,215	7,215	7,215
Energy Savings (kWh)	2,633,290	5,266,579	7,899,869	10,533,159	13,166,449	14,916,759	16,667,069	18,417,379	20,167,689	21,917,999	23,668,309	25,418,619	27,168,929	28,919,239	30,669,549	30,669,549	30,669,549	30,669,549	30,669,549	30,669,549

  

<b>Rates</b>																				
Demand (\$/kW)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Energy (\$/kWh)	\$0.1968	\$0.2011	\$0.2056	\$0.2101	\$0.2147	\$0.2194	\$0.2242	\$0.2292	\$0.2342	\$0.2394	\$0.2446	\$0.2500	\$0.2555	\$0.2611	\$0.2669	\$0.2728	\$0.2788	\$0.2849	\$0.2912	\$0.2976

  

**BENEFIT CALCULATIONS:**

<b>Avoided Costs (Utility, Ratepayer)</b>																				
Demand	\$106,555	\$213,824	\$321,134	\$428,565	\$0	\$0	\$0	\$0	\$0	\$1,075,153	\$1,288,525	\$1,247,431	\$1,223,708	\$1,201,408	\$1,177,839	\$1,118,579	\$1,078,184	\$1,038,899	\$999,564	\$960,536
Energy	\$288,652	\$564,391	\$840,390	\$1,115,808	\$1,302,210	\$1,497,753	\$1,734,053	\$1,909,628	\$2,195,449	\$2,695,630	\$3,752,108	\$3,687,846	\$3,422,400	\$3,264,044	\$3,047,530	\$2,853,980	\$2,598,311	\$2,054,252	\$1,807,068	\$711,681
<b>Total</b>	<b>\$395,207</b>	<b>\$778,214</b>	<b>\$1,128,642</b>	<b>\$1,354,433</b>	<b>\$1,302,210</b>	<b>\$1,497,753</b>	<b>\$1,734,053</b>	<b>\$1,909,628</b>	<b>\$2,195,449</b>	<b>\$3,770,783</b>	<b>\$5,040,633</b>	<b>\$4,935,277</b>	<b>\$4,646,108</b>	<b>\$4,465,452</b>	<b>\$4,245,369</b>	<b>\$3,945,559</b>	<b>\$3,376,495</b>	<b>\$3,093,151</b>	<b>\$2,600,632</b>	<b>\$248,854</b>

  

**Avoided Costs (Total Resource)**

Demand	\$106,555	\$213,824	\$321,134	\$428,565	\$0	\$0	\$0	\$0	\$0	\$1,075,153	\$1,288,525	\$1,247,431	\$1,223,708	\$1,201,408	\$1,177,839	\$1,118,579	\$1,078,184	\$1,038,899	\$999,564	\$960,536
Energy	\$288,652	\$564,391	\$840,390	\$1,115,808	\$1,302,210	\$1,497,753	\$1,734,053	\$1,909,628	\$2,195,449	\$2,695,630	\$3,752,108	\$3,687,846	\$3,422,400	\$3,264,044	\$3,047,530	\$2,853,980	\$2,598,311	\$2,054,252	\$1,807,068	\$711,681
<b>Total</b>	<b>\$395,207</b>	<b>\$778,214</b>	<b>\$1,128,642</b>	<b>\$1,354,433</b>	<b>\$1,302,210</b>	<b>\$1,497,753</b>	<b>\$1,734,053</b>	<b>\$1,909,628</b>	<b>\$2,195,449</b>	<b>\$3,770,783</b>	<b>\$5,040,633</b>	<b>\$4,935,277</b>	<b>\$4,646,108</b>	<b>\$4,465,452</b>	<b>\$4,245,369</b>	<b>\$3,945,559</b>	<b>\$3,376,495</b>	<b>\$3,093,151</b>	<b>\$2,600,632</b>	<b>\$248,854</b>

  

**Avoided Costs (Participant)**

Demand	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Energy	\$18,231	\$1,059,265	\$1,623,853	\$2,212,771	\$2,826,815	\$3,373,061	\$3,737,573	\$4,220,940	\$4,723,766	\$5,246,674	\$5,790,303	\$6,355,312	\$6,942,380	\$7,552,202	\$8,185,496	\$8,365,577	\$8,549,620	\$8,737,712	\$8,929,941	\$9,126,400
<b>Total</b>	<b>\$18,231</b>	<b>\$1,059,265</b>	<b>\$1,623,853</b>	<b>\$2,212,771</b>	<b>\$2,826,815</b>	<b>\$3,373,061</b>	<b>\$3,737,573</b>	<b>\$4,220,940</b>	<b>\$4,723,766</b>	<b>\$5,246,674</b>	<b>\$5,790,303</b>	<b>\$6,355,312</b>	<b>\$6,942,380</b>	<b>\$7,552,202</b>	<b>\$8,185,496</b>	<b>\$8,365,577</b>	<b>\$8,549,620</b>	<b>\$8,737,712</b>	<b>\$8,929,941</b>	<b>\$9,126,400</b>

  

**COST CALCULATIONS:**

<b>Cost Inputs:</b>																				
Implementation	\$464,075	\$488,027	\$507,177	\$522,493	\$539,490	\$558,577	\$578,358	\$598,859	\$620,107	\$642,128	\$664,953	\$688,611	\$713,132	\$738,548	\$764,894	\$792,202	\$820,510	\$849,854	\$880,273	\$911,806
Incentives	\$589,000	\$589,000	\$589,000	\$589,000	\$589,000	\$601,958	\$615,201	\$628,735	\$642,568	\$656,704	\$671,152	\$685,917	\$701,007	\$716,429	\$732,191	\$748,299	\$764,762	\$781,586	\$798,781	\$816,354
Participant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Total RIM Costs</b>	<b>\$67,294,197</b>	<b>\$1,572,206</b>	<b>\$2,136,292</b>	<b>\$2,720,030</b>	<b>\$3,324,263</b>	<b>\$3,953,304</b>	<b>\$4,633,595</b>	<b>\$5,448,534</b>	<b>\$6,296,440</b>	<b>\$7,178,806</b>	<b>\$8,096,056</b>	<b>\$9,048,209</b>	<b>\$10,034,892</b>	<b>\$11,056,581</b>	<b>\$12,113,892</b>	<b>\$13,207,202</b>	<b>\$14,337,272</b>	<b>\$15,503,712</b>	<b>\$16,707,054</b>	<b>\$17,948,160</b>
<b>Total Utility Costs</b>	<b>\$13,229,064</b>	<b>\$1,053,975</b>	<b>\$1,077,027</b>	<b>\$1,096,177</b>	<b>\$1,111,493</b>	<b>\$1,160,535</b>	<b>\$1,193,559</b>	<b>\$1,227,594</b>	<b>\$1,262,674</b>	<b>\$1,298,833</b>	<b>\$1,336,105</b>	<b>\$1,374,528</b>	<b>\$1,414,139</b>	<b>\$1,454,978</b>	<b>\$1,497,084</b>	<b>\$1,540,501</b>	<b>\$1,585,272</b>	<b>\$1,631,440</b>	<b>\$1,679,054</b>	<b>\$1,728,160</b>
<b>Total TRC Costs</b>	<b>\$6,437,703</b>	<b>\$464,075</b>	<b>\$488,027</b>	<b>\$507,177</b>	<b>\$522,493</b>	<b>\$539,490</b>	<b>\$558,577</b>	<b>\$578,358</b>	<b>\$598,859</b>	<b>\$620,107</b>	<b>\$642,128</b>	<b>\$664,953</b>	<b>\$688,611</b>	<b>\$713,132</b>	<b>\$738,548</b>	<b>\$764,894</b>	<b>\$792,202</b>	<b>\$820,510</b>	<b>\$849,854</b>	<b>\$880,273</b>

**Avoided Capacity and Energy Costs**

SCENARIO: Used year-by-year estimates for 20-year forecast horizon (2006-2025), then the escalated levelized value for years beyond.

**Electric Avoided Cost**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Demand (\$/kW)	\$180	\$181	\$181	\$181	\$0	\$0	\$0	\$0	\$0	\$211	\$234	\$210	\$192	\$177	\$163	\$155	\$149	\$144	\$139	\$133	\$127	\$127	
Average Energy (\$/kWh)	\$0.110	\$0.107	\$0.102	\$0.107	\$0.099	\$0.100	\$0.104	\$0.104	\$0.109	\$0.123	\$0.159	\$0.145	\$0.126	\$0.113	\$0.100	\$0.092	\$0.075	\$0.067	\$0.033	-\$0.023	\$0.101	\$0.101	
	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Demand (\$/kW)	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	\$127	
Average Energy (\$/kWh)	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	\$0.101	

Source: HECO System Planning estimates (see below)

Data from 10/9/06 Email from Alan Hee (with attached pdf file containing avoided capacity and energy costs using C.T. proxy)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Year-by-year Estimates																				
Demand (\$/kW)	193	194	194	194	0	0	0	0	0	226	250	225	206	190	175	166	160	154	148	143
Average Energy (\$/MWh)	117	115	109	114	106	108	111	111	117	132	170	155	135	121	107	99	80	72	35	-25
Average Energy (\$/kWh)	0.117398	0.1148	0.1094	0.1145	0.1059	0.1075	0.1114	0.111	0.1166	0.1317	0.1698	0.1554	0.1349	0.1209	0.1071	0.0987	0.0803	0.0717	0.035	-0.025

Avoided Cost (Levelized) -- Costs held constant from 2026 to 2050.

Demand (\$/kW)	136
Average Energy (\$/MWh)	\$108
Average Energy (\$/kWh)	\$0.1081

Adjustment of Avoided costs to reflect Net-to-System: Based on email from Alan Hee (8/9/06):

Please multiply the avoided costs from Exhibit 12 by  $(1-0.1117) \times (1-0.04864) = 0.93372$  so that they can be multiplied times the gross generation levels of kw and kwh

Adjustment Factor: 0.9337

Derivation of DSM Utility Incentive  
If Equivalent to Earnings From a Similar Supply-Side Resource

In HECO/RMI-FSOP-IR-142 the Rocky Mountain Institute (RMI) was asked to provide details on the incentives the utility would be allowed to earn from a “negawatt-hour” if the incentive was equal to the amount the utility would earn building new supply side resources to generate and deliver a kilowatt-hour to serve the same load. In its response, RMI stated that, “HECO earns the allowed return on equity times the equity proportion of capital for these investments.”

RMI’s utility compensation mechanism was tied to avoided investment costs, and assumed that decoupling was in place so that lost margin recovery did not have to be taken into consideration. Tr. at 942-43 (Freedman); see Response to HECO/RMI-IR-142.

There was substantial discussion regarding the return on equity that the Company would forego as a result of implementing DSM programs. HECO also questioned RMI’s calculation of the avoided return on equity, since RMI looked at annual revenue requirements and did not take into account the fact that the utility would receive a return on investment during every year the avoided plant was available. See Tr. at 900 (Violette), 143-46 (Freedman).

On page 3 of 5 of its response, RMI provided the following illustrative calculation of shareholder compensation:

Equity % \* Equity Earning Requirement \* Levelized Avoided Capacity Cost  
= Levelized Utility Earnings/Cumulative Savings KW

Where,

Equity % = 52%  
Equity Earning Requirement = 11.5%  
Levelized Avoided Cost = \$543.94/KW  
Levelized Utility Earnings = \$32.53/KW

Conceptually, RMI made two errors in its calculations: (1) it applied the equity percentage to the revenue requirements, rather than to rate base and (2) it did not gross up for income taxes. In the “No Future EE DSM” case, the capital investment is made in 2015. In the “With Future EE DSM” case, the capital investment is made in 2024. The differential average rate base investments between the coal unit installed in 2015 (“No Future EE DSM” case) and the coal unit installed in 2024 (“With Future EE DSM case”) can be calculated. To determine the amount equivalent to the foregone net income of investing in the coal unit, the equity % times the rate of return on equity should be applied to the average rate base difference between the two plans (rather than the annual revenue requirements difference). In order for shareholders to net the equivalent net income amount over the study period, the amount collected from ratepayers would also have to be grossed-up for income (and revenue) taxes.

In HECO's view, the foregone return on equity would not necessarily serve as a basis for setting the utility compensation (and could result in substantially more compensation than the Company is requesting if correctly calculated), but HECO committed to providing a calculation of avoided capital costs so that that information would be available to the Commission. See Tr. at 915, 917-20 (Hee).

The attached worksheet contains two sets of calculations. The first (Columns A through E) recalculates RMI's revenue requirements methodology based on the deferral of a coal unit avoided by HECO's proposed energy efficiency DSM programs. While HECO disagrees with this methodology, it has recalculated RMI's methodology to provide a basis for understanding how it was done. The second calculation (Columns A, and F through H) derives the utility's earnings from the installation of the coal unit, and derives equivalent levelized net income and revenue per kw of incremental DSM demand savings.

In the "No Future EE DSM" case, the capital investment is made in 2015. In the "With Future EE DSM" case, the capital investment is made in 2024. This is a simplification of the avoided cost calculation submitted in CA/HECO-IR-9 page 49 of 55 (revised 08-24-06). The attached calculation excludes the "virtual DG" units and excludes all fixed O&M costs.

Column A shows the differential average rate base investments between the coal unit installed in 2015 ("No Future EE DSM" case) and the coal unit installed in 2024 ("With Future EE DSM case"). In years 2015-2023, the average rate base is the rate base investment associated with the coal unit installed in 2015. In years 2024 and 2025, the negative average rate base is the difference between the remaining rate base investment (since accumulated depreciation is subtracted) associated with a coal unit installed in 2015 ("No Future EE DSM" case) minus the rate base investment associated with a coal unit installed in 2024 ("With Future EE DSM" case). Column B shows the differential costs (i.e. revenue requirements excluding revenue taxes) associated with the differential average rate base investments. The total differential cost is \$316,479,640 on a net present value basis.

Column C is the EE DSM Peak Reduction (MW) [per CA/HECO-IR-9 (revised 8/24/06) page 49 of 55, col. 20]. The levelized cost of \$618.11/KW in column D is the levelized rate which, when applied to series of cumulative MW peak reductions in Column C, has the same net present value as the total differential cost (\$316,479,640 on a net present value basis).

Applying RMI's proposed methodology and using these investment assumptions would result in Utility Compensation of \$40.05/KW.

Therefore, assuming:

Equity % = 54%

Equity Earning Requirement = 12%

Levelized Avoided Cost = \$618.11/KW

Levelized Utility Earnings =  $54\% * 12\% * \$618.11/\text{KW} = \$40.05/\text{KW}$

Column E shows the amount of revenue, excluding revenue taxes, that the utility would be permitted to recover each year at RMI's proposed levelized utility earnings methodology. However, this significantly understates the amount which must be collected from ratepayers in order for the utility to stay whole.

To determine the amount for ratepayers to pay to be equivalent to the foregone net income of investing in the coal unit, the equity % times the rate of return on equity should be applied to the average RATE BASE (rather than the annual revenue requirements as RMI has done). The determination of this foregone net income and the conversion to revenue is the second calculation.

Column F shows the differential net income to shareholders when the equity % times the rate of return on equity is applied to the average RATE BASE in Column A. Return on equity applied to rate base provides the net income foregone by shareholders.

Column G is the incremental EE DSM load reduction per year. The levelized amount which must be collected from ratepayers is \$1,745.37/incremental KW, as shown in Column H. This is the levelized amount that when multiplied by the annual incremental EE DSM load reductions results in an income stream has the same net present value as the net present value of the net income foregone.

In order for shareholders to net the equivalent net income amount over the study period, the amount collected from ratepayers must also be grossed-up for income (and revenue) taxes. This amount is \$2,857.04 of revenue per incremental kw of DSM savings. At the net income level, it represents the NPV of the 20-year stream of earnings from a supply-side resource of a size equivalent to the incremental kw of DSM savings.

For example, for the nearly 8 mw of projected savings from energy efficiency DSM programs, annual revenue of \$22,685,000 is the equivalent of the NPV of the 20-year stream of revenue that would provide the utility with the same level of shareholder earnings from a similar amount of supply side resources. Note that unlike the recovery of the return of and on rate base that occurs each year through rates, this is a one-time recovery of the shareholder earnings for that increment of kw reduction. HECO has proposed that its utility incentive be capped at \$4 million each year.



Shareholder Incentive Rate Calculation  
Coal unit in 2015 deferred to 2024; \$ in 000)

Year	Differential Average Rate Base (A)	Differential Costs [Revenue Requirement (Excluding Revenue Taxes)] (B)	EE DSM Peak Reduction (MW) per CA/HECO-IR-9 (revised 8/24/06) page 49 of 55, col. 20 (C)	Levelized Cost (D) (Db) * (C)	Calculation Consistent with Response to HECO/RMI-FSOP- IR-142 (E) (Ea) * (C)	Differential Net Income to Shareholders (F) (A)*(f)	Incremental EE DSM Peak Reduction (MW) (G)	Levelized Net Income (H) (Hb) * (G)
2006	0.00	0.00	7.94	4,907.73	318.02	0.00	7.94	13,858.16
2007	0.00	0.00	17.43	10,770.85	697.95	0.00	9.49	16,555.91
2008	0.00	0.00	25.49	15,757.81	1,021.11	0.00	8.07	14,081.87
2009	0.00	0.00	33.38	20,631.36	1,336.91	0.00	7.88	13,761.65
2010	0.00	0.00	41.04	25,365.33	1,643.67	0.00	7.66	13,367.49
2011	0.00	0.00	47.39	29,294.14	1,898.26	0.00	6.00	10,472.24
2012	0.00	0.00	53.11	32,828.42	2,127.28	0.00	6.00	10,472.24
2013	0.00	0.00	59.43	36,733.31	2,380.32	0.00	6.00	10,472.24
2014	0.00	0.00	66.03	40,812.28	2,644.64	0.00	6.00	10,472.24
2015	773,571.80	108,639.95	72.74	44,959.75	2,913.39	50,127.45	6.00	10,472.24
2016	756,232.90	132,776.69	78.70	48,647.95	3,152.39	49,003.89	6.00	10,472.24
2017	722,096.21	127,982.55	84.47	52,213.76	3,383.45	46,791.83	6.00	10,472.24
2018	689,001.15	123,334.70	89.06	55,050.17	3,567.25	44,647.27	6.00	10,472.24
2019	656,869.58	118,822.17	93.45	57,764.87	3,743.16	42,565.15	6.00	10,472.24
2020	625,629.26	114,434.79	97.85	60,483.35	3,919.32	40,540.78	6.00	10,472.24
2021	595,213.33	110,163.20	99.54	61,523.39	3,986.72	38,569.82	6.00	10,472.24
2022	565,559.96	105,998.70	99.67	61,606.92	3,992.13	36,648.29	6.00	10,472.24
2023	536,333.28	101,894.12	99.70	61,625.93	3,993.36	34,754.40	6.00	10,472.24
2024	(502,168.50)	(43,952.43)	99.73	61,644.64	3,994.57	(32,540.52)	6.00	10,472.24
2025	(508,711.60)	(79,541.51)	99.76	61,663.58	3,995.80	(32,964.51)	6.00	10,472.24
Total		920,552.95		844,285.55	54,709.70	318,143.85		228,708.69
Net Present Value		316,479.64		316,479.64	20,507.88	113,914.92		113,914.92

(a) Calculation consistent with Response to HECO/RMI-FSOP-IR-142

40.05

(b) Levelized on cumulative DSM KW

618.11

(c) Levelized on incremental DSM KW

1,745.37

(d) Levelized Plus Income Tax Gross-Up

2,857.04

(e) Levelized Plus Revenue Tax Gross-Up

3,135.64

(b) Rate per EE DSM Peak KW that equals the corresponding present value

(d) b)/(1-income tax rate) to calculate the revenues needed to get the levelized amount net after income taxes

(e) (c)/(1-revenue tax rate) to calculate the revenues needed to get the levelized amount net after income & revenue taxes

**Assumptions**

Cost of Capital Assumptions:	Weight	Rate	Weighted Average	After-tax Weighted Average	Weighted Average Revenue Requirement
ST Debt	3.00%	6.00%	0.180%	0.110%	0.198%
LT Debt	36.00%	6.50%	2.340%	1.430%	2.568%
Preferred Stock	7.00%	8.00%	0.560%	0.560%	1.006%
Common Stock	54.00%	12.00%	6.480% (f)	6.480%	11.642%
			9.560%	8.579%	15.413%
				discount rate	
<b>Tax Assumptions:</b>					
Federal	35.00%	32.89%			
State	6.40%	6.02%			
		38.91%			
Public Service Company Tax		5.885%			
PUC Fee		0.500%			
Franchise Tax		2.500%			
Revenue Tax Rate		8.885%			
Coal unit in 2015		802,690.00			
Coal unit in 2024		1,047,328.00			